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TRANSACTIONS

OF THE

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OF

OBSTETRICIANS AND GYNECOLOGISTS.

VOL. XV.

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NOTE.

The Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

WILLIAM WARREN POTTER, *Secretary*,
284 FRANKLIN STREET, BUFFALO.

[Minutes and discussions stenographically reported by WILLIAM WHITFORD, Chicago, Ill.]

LIST OF ILLUSTRATIONS.

Abdominal Hysterectomy. (J. Henry Carstens) . . . 213
Bilateral Section of Uterus exposing Endometrium. (Lewis S. McMurtry.) 224
Portrait of James Thomas Jelks 371

CONTENTS.

	PAGE
Constitution	ix
By-Laws	xii
Officers for 1902-1903	xvii
List of Honorary Fellows	xix
List of Corresponding Fellows	xxiii
List of Ordinary Fellows	xxv
Minutes of the Fifteenth Annual Meeting	xlv
President's Address: Of Our Shortcomings. By EDWIN RICKETTS, M.D.	1
Pelvic Disease in the Young and Unmarried. By CHARLES L. BONIFIELD, M.D.	9
Extirpation of the Gall-bladder through the Lumbar Incision. By WALTER P. MANTON, M.D.	22
Suprapubic versus Infrapubic Procedures in the Treatment of Pelvic Suppuration. By J. J. GURNEY WILLIAMS, M.D.	29
Ice Following Abdominal Section. By FRANK F. SIMPSON, M.D.	41
Two Fatal Cases of Tetanus Following Abdominal Section, due to Infected Ligatures, with a Plea for the Angiotribe in Abdominal Surgery. By WALTER B. DORSETT, M.D.	55
Some Problems in Exploratory Laparatomy. By WALTER B. CHASE, M.D.	69
General Consideration of Drainage in Abdominal and Pelvic Surgery. By JOSEPH PRICE, M.D.	76
Ruptured Pus Tubes. By CHARLES GREENE CUMSTON, M.D.	78
Treatment of Pelvic Abscess. By HERMAN E. HAYD, M.D.	93
The Vaginal Route for Operations on the Uterus and Appendages. By JOSEPH H. BRANHAM, M.D.	100
A Résumé of the Rationale and the Technique of Bi-inguinal Celiotomy for Complicated Aseptic Retroversions of the Uterus; and a Further Report of its Remote Results. By ALBERT GOLDSPOHN, M.D.	120
The Irrational Starvation Treatment of Appendicitis. By JOHN B. DEAVER, M.D.	146
Surgical Relations that the Region of the Appendix Bears to Pelvic Suppuration and Operative Complications. By JOSEPH PRICE, M.D.	167
Some Unusual Cases of Appendicitis and the Lessons they Teach. By MILES F. PORTER, M.D.	176

PAGE

Four Cases Illustrating the Difficulties of Diagnosticating Appendicitis. By WILLIAM WOTKYNS SEYMOUR, M.D. . . 184
Intrauterine Fibroids Complicating Pregnancy, and Retained Placenta Associated with Intrauterine Fibroids Complicating Pregnancy—Cases and Treatment. By MAGNUS A. TATE, M.D. 196
Celiotomy During Pregnancy. By J. HENRY CARSTENS, M.D. . 209
Deciduoma Malignum. By LEWIS S. MCMURTRY, M.D. . . 221
Perforating Ulcers of the Duodenum. By JOHN B. MURPHY, M.D., and J. M. NEFF, M.D. 228
Report of a Number of Cases of Operation for Peritoneal Tuberculosis, with Remarks. By RUFUS B. HALL, M.D. . . 259
Personal Views on the Surgical Treatment of Perforated Gastric Ulcer with General Infection of Peritoneal Cavity. By HENRY HOWITT, M.D. 275
Report of Two Cases of Gastrectomy, with Remarks. By ALBERT VANDER VEER, M.D. 289
The Management of Cases of Emergency Arising from Rupture in Ectopic Pregnancy. By AUGUSTUS P. CLARKE, M.D. . . 296
Normal Involution of the Appendix as a Matter of Surgical Interest. By ROBERT T. MORRIS, M.D. 303
Normal Saline Solutions Before, During, and After Abdominal Operations. By WILLIAM H. HUMISTON, M.D. 308
Carcinoma of the Cervix Uteri—Summary Report of the Author's Sixty-two Cases Operated Upon by Hysterectomy. By L. H. DUNNING, M.D. 314
Etiology and Prophylaxis of Lesions of the Female Pelvic Tract Following Labor. By EDWARD J. ILL, M.D. 321
Causes of Recurrence of Biliary Symptoms after Cholecystotomy. By CHARLES S. HAMILTON, M.D. 330
Management of Breech Presentations. By WILLIAM D. PORTER, M.D. 334
Puerperal Eclampsia. By EDWARD T. ABRAMS, M.D. . . . 341
Carcinoma of the Large Intestines, with Special Reference to von Mikulicz's Method of Resection. By M. STAMM, M.D. . . 348
Hernia of the Uterus, Both Ovaries—One of these being Cystic—Fallopian Tubes, Bladder, and Rectum in a Sac Formed by the Vagina. By MANNING SIMONS, M.D. 357
The Mechanism of Labor in Posterior Positions of Vertex Presentations. By SIGMAR STARK, M.D. 363
Rupture of the Urinary Bladder. By JOHN W. KEEFE, M.D. . 367
In Memoriam: James Thomas Jelks, M.D. By WILLIAM WARREN POTTER, M.D. 373

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

TOGETHER WITH

MINUTES OF THE FIFTEENTH ANNUAL MEETING.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, and Corresponding Fellows.

The Ordinary Fellows shall not exceed one hundred and twenty-five in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting, by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council and elected by the Association.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual TRANSACTIONS.

They shall pay an annual fee of five dollars.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-presidents, a Secretary, a Treasurer, and six Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The first five officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

["At the election next succeeding the adoption of these laws, the full number of Executive Councillors shall be elected; two for a term of three years, two for a term of two years, and two for a term of one year.

"At every subsequent election two Councillors shall be elected for a term of three years, and shall continue in office until their successors shall have been elected and shall have qualified."][1]

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

[1] Amendment adopted September 21, 1898.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting: *provided,* that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding: and *provided, further,* that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence one of the Vice-presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the TRANSACTIONS under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members, may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A.M.
   a. Reports of Committees on Scientific Questions.
   b. Reading of Papers and Discussion of the same.
2. One Business Meeting shall be held at half-past nine o'clock A.M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's Record shall be read; the Treasurer's Accounts submitted; the Reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow on admission shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay *in advance (i.e.,* at the beginning of each fiscal year) the sum of twenty dollars annually thereafter.

[A fiscal year includes the period of time between the first day of one annual meeting and the first day of the next.]

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive annually a draft from the President drawn on the Treasurer for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years, unless he offer a satisfactory excuse, may be dropped from fellowship upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided,* previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1902-1903.

PRESIDENT.

LEHMAN HERBERT DUNNING, INDIANAPOLIS.

VICE-PRESIDENTS.

MARCUS ROSENWASSER, CLEVELAND.
HERMAN EMILIE HAYD, BUFFALO.

SECRETARY.

WILLIAM WARREN POTTER, BUFFALO.

TREASURER.

XAVIER OSWALD WERDER, PITTSBURG.

EXECUTIVE COUNCIL.

EDWARD JOSEPH ILL, NEWARK.
WILLIAM HENRY HUMISTON, CLEVELAND.
EDWIN RICKETTS, CINCINNATI.
WALTER BENAJAH CHASE, NEW YORK.
ALBERT VANDER VEER, ALBANY.
LEWIS SAMUEL McMURTRY, LOUISVILLE.

HONORARY FELLOWS.

* Deceased.

1899.—Ballantyne, John William, M.D., F.R.C.P.E., F.R.S. Edin. Lecturer on Midwifery and Gynecology, School of the Royal College, Edinburgh; Examiner in Midwifery and Gynecology in the University of Edinburgh; Vice-president of the Edinburgh Obstetrical Society; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society. 24 Melville Street, Edinburgh, Scotland.

1889.—Bantock, George Granville, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. 12 Granville Place, Portman Square, W., London, England.

1889.—Barbour, A. H. Freeland, M.A., B.S.C., M.D., F.R.C.P. Ed., F.R.S. Ed. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies, and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 4 Charlotte Square, Edinburgh, Scotland.

1892.—*Boislinière, L. Ch., A.B., M.D., LL.D. St. Louis, Mo. 1896.

1890.—Championnière, Just. Lucas, M.D. 3 Avenue Montaigne, Paris, France.

1889.—*Charpentier, Louis Arthur Alphonse, M.D. Paris, France. 1899.

1888.—Cordes, August Elisée, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical So-

ciety of London and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecological Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at the Maternity at Geneva; Consulting Accoucheur of the Miséricorde Hospital, etc.; Perpetual Member of the Société Obstétricale de France, Paris, France. 12 Rue Bellot, Geneva, Switzerland.

1890.—*Corson, Hiram, M.D. 1896.

1889.—Croom, Sir J. Halliday, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Physician to and Clinical Lecturer on Diseases of Women, Royal Infirmary, Edinburgh; Physician to the Royal Maternity Hospital; Lecturer on Midwifery and the Diseases of Women at the School of Medicine; Consulting Physician for Diseases of Women, Western Dispensary. 25 Charlotte Square, Edinburgh, Scotland.

1889.—*Dunlap, Alexander, A.M., M.D. Springfield, O. 1894.

1888.—*Edis, Arthur Wellesley, M.D. Lond., F.R.C.S., M.R.S.C.S. London, England. 1893.

1889.—*Eklund, Abraham Fredrik, M.D. Stockholm, Sweden. 1898.

1891.—Fernandez, Juan Santos, M.D. Calle de la Reina, No. 92, Havana, Cuba.

1891.—*Fisher, George Jackson, A.M., M.D. Sing Sing, N. Y. 1893.

1889.—Freund, William Alexander, M.D. Professor and Director of the Clinic for Diseases of Women in the University of Berlin. Kleiststrasse 5, Berlin W., Germany.

1896.—Gaston, James McFadden, A.M., M.D. Professor of Surgery in the Southern Medical College, Atlanta; Fellow of the American Surgical Association; Member of the Southern Surgical and Gynecological Association. 421 Capitol Avenue, Atlanta, Ga.

1892.—*Green, Traill, M.D., LL.D. Easton, Pa. 1897.

1894.—JACOBS, CHARLES, M.D. Professor of the Faculty of Medicine of Brussels; Secretary-General of the Permanent Committee of the Periodic International Congress of Gynecology and Obstetrics; Honorary President of the Belgian Society of Gynecology and Obstetrics; Honorary Fellow of the Gynecological Societies of New York and Chicago; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Gynecological Society of Paris; Surgeon to the Brussels Polyclinic. 53 Boulevard de Waterloo, Brussels, Belgium.

1889.—*KEITH, THOMAS, M.D. London, England. 1896.

1889.—LEOPOLD, G., M.D. Professor in the Royal Clinic for Diseases of Women. 12 Seminar-Strasse, Dresden, Germany.

1894.—MACLEAN, DONALD, M.D. President of the American Medical Association, 1894. 72 Lafayette Avenue, Detroit, Mich.

1890.—MARTIN, AUGUST, M.D. Professor of Gynecology in the University of Greifswald. Greifswald, Germany.

1895.—*MASTIN, CLAUDIUS HENRY, M.D., LL.D. Mobile, Ala. 1898.

1897.—MATHEWS, JOSEPH MCDOWELL, M.D. Professor of Diseases of the Rectum and Clinical Surgery, Hospital College of Medicine; President of the Kentucky State Board of Health; First Vice-president American Medical Association, 1898; President, 1899. 923 Fourth Avenue, Louisville, Kentucky.

1891.—*MOSES, GRATZ ASHE, M.D. St. Louis, Mo. 1901.

1889.—NICOLAYSEN, JULIUS, M.D. Professor of Surgery in the University of Norway. Christiania, Norway.

1891.—PIETRANERA, E., M.D. Professor of Obstetrics in the Medical Department of the National University; Director of the Maternity Branch of the Clinical Hospital. 2711 Calle Rio Adaria, Buenos Ayres, Argentine Republic, S. A.

1889.—*SAENGER, MAX, M.D. Prague. 1903.

1890.—SAVAGE, THOMAS, M.D., F.R.C.S. Eng. Surgeon to the Birmingham Hospital for Women. 33 Newhall Street, Birmingham, England.

1889.—SCHULTZE, BERNHARD SIGMUND, M.D. Professor of Gynecology; Director of the Lying-in Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1896.—SÉGOND, PAUL, M.D. Professor of the Faculty of Medicine, Paris; Surgeon to the Salpêtrière; Principal Physician to the Orleans Railroad. 11 Quai d'Orsay, Paris, France.

1899.—SINCLAIR, WILLIAM JAPP, M.A., M.D. (Aberd.), M.R.C.P. Professor of Obstetrics and Gynecology, Owens College, Victoria University; Physician to the Manchester Southern Hospital for Diseases of Women and Children. 250 Oxford Road, Manchester, England.

1894.—*SLAVIANSKY, KRONID, M.D. St. Petersburg, Russia. 1898.

1888.—*SMITH, J. GREIG, M.A., C.M., M.B., F.R.S.E. Bristol, England. 1897.

1896.—STERNBERG, GEORGE MILLER, A.M., M.D., LL.D. Brigadier-General and Surgeon-General U. S. Army. Washington, D. C.

1899.—*STORRS, MELANCTHON, A.M., M.D. (Transferred from Ordinary Fellow.) Hartford, Conn. 1900.

1888.—*TAIT, LAWSON, M.D., LL.D., F.R.C.S.E. Birmingham, England. 1899.

1900.—THORNTON, J. KNOWSLEY, M.B., M.C. Corresponding Fellow of the Boston Gynecological Society; Past President of the Medical Society of London. Hildersham Hall, Cambridge, England.

1888.—WILLIAMS, SIR JOHN, Bart., M.D., F.R.C.P. 63 Brook Street, Grosvenor Square, W., London, England.

1901.—WEBER, G. C. Willoughby, Ohio.

1889.—VON WINCKEL, F., M.D. Professor of Gynecology and Director of the Royal Hospital for Women; Member of the Supreme Council and of the Faculty of Medicine in the University of Munich. 16A Sonnenstrasse, Munich, Germany.

Total, twenty-five Honorary Fellows.

CORRESPONDING FELLOWS.

1899.—BEUTTNER, OSCAR, M.D. Private-docent of the Faculty of Medicine. 2 Place de la Fasterie, Geneva, Switzerland.

1891.—GRIFFIN, HERBERT SPOHN, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto. 157 Main Street, Hamilton, Ontario, Canada.

1891.—MACHELL, HENRY THOMAS, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Women's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

1898.—WRIGHT, ADAM HENRY, B.A., M.D. Univ. Toronto, M.R.C.S. Eng. Professor of Obstetrics in the University of Toronto: Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital. President, 1891. (Transferred from Ordinary List, 1898.) 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, four Corresponding Fellows.

ORDINARY FELLOWS.

* Deceased. † Resigned.

1902.—ABRAMS, EDWARD THOMAS, A.M., M.D. Consulting Surgeon to the Lake Superior General Hospital; Member of the Michigan State Medical Society; Member of the American Medical Association. Dollar Bay, Mich.

1890.—ASDALE, WILLIAM JAMES, M.D. Professor of Diseases of Women, Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania). 5523 Ellsworth Avenue, Pittsburg, Pa.

1895.—BACON, JOSEPH BARNES, M.D. Professor of Rectal Diseases at the Post-Graduate Medical School; Instructor in Clinical Surgery in the Medical Department of Northwestern University. Macomb, Ill.

Founder.—BAKER, WASHINGTON HOPKINS, M.D. Senior Obstetrician to the Maternity Hospital; Physician to the German Hospital. 1610 Summer Street, Philadelphia, Pa.

1895.—BALDWIN, JAMES FAIRCHILD, A.M., M.D. Surgeon to Grant Hospital, 125 South Grant Avenue. Residence 405 E. Town Street, Columbus, O.

1889.—BARROW, DAVID, M.D. Member of the Southern Surgical and Gynecological Association. Residence 379 South Broadway; Office 148 Market Street, Lexington, Ky.

1892.—BLUME, FREDERICK, M.D. Gynecologist to the Allegheny General Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to the Mercy Hospital; President of the Pittsburg Obstetrical Society, 1892. 524 Penn Avenue, Pittsburg, Pa.

1900.—BONIFIELD, CHARLES LYBRAND, M.D. Professor of Clinical Gynecology in the Medical College of Ohio; President

of the Cincinnati Academy of Medicine, 1900; Gynecologist to the Good Samaritan, Christ's, and to Speer's Memorial Hospitals; formerly President of the Cincinnati Obstetrical Society; Secretary of the Section on Obstetrics and Gynecology, American Medical Association, 1901. 2142 Auburn Avenue, Cincinnati, O.

1896.—BOSHER, LEWIS C., M.D. Professor of the Principles of Surgery and Clinical Lecturer on Genito-urinary Surgery, Medical College of Virginia; Visiting Surgeon to the Old Dominion Hospital. 717 East Franklin Street, Richmond, Va.

Founder.—BOYD, JAMES PETER, A.M., M.D. Professor of Obstetrics, Gynecology, and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obstetric Surgeon to St. Peter's Hospital; Fellow of the British Gynecological Society. 152 Washington Avenue, Albany, N. Y.

1889.—BRANHAM, JOSEPH H., M.D. Demonstrator of Anatomy in the College of Physicians and Surgeons; Visiting Surgeon to Bayview Hospital. 2200 Eutaw Place, cor. Ninth Avenue, Baltimore, Md.

1894.—BROWN, JOHN YOUNG, JR., M.D. Late First Assistant Physician in the Central Kentucky Asylum for the Insane; President of the Mississippi Valley Medical Association, 1898. Corner Maryland and Euclid Avenues, St. Louis, Mo.

1889.—*BURNS, BERNARD, M.D. Allegheny, Pa. 1892.

1898.—†CAMERON, MARKLEY CONNELL, M.D. Pittsburg. 1902.

Founder.—CARSTENS, J. HENRY, M.D. Professor of Obstetrics and Clinical Gynecology in the Detroit College of Medicine; Gynecologist to the Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-president,* 1888-89; *President,* 1895; *Executive Council,* 1896-98. 620 Woodward Avenue, Detroit, Mich.

1895.—CHASE, WALTER BENAJAH, M.D. Gynecologist to the Bushwick Hospital; Attending Surgeon and Gynecologist, Central Hospital and Dispensary; Consulting Gynecologist to the Long Island College Hospital; Councillor to the Long Island College Hospital; Fellow of the Brooklyn Gynecological Society

(President, 1893); Member Medical Society County of Kings (President, 1892); Permanent Member Medical Society State of New York; Member of the Brooklyn Pathological Society, and Honorary Member of the Queens County Medical Society. *Executive Council*, 1899-1903. 263 Hancock Street, New York, Borough of Brooklyn.

Founder.—CLARKE, AUGUSTUS PECK, A.M., M.D. Dean and Professor of Gynecology and Abdominal Surgery in the College of Physicians and Surgeons, Boston; Vice-president of the American Medical Association, 1896; President of the Gynecological Society of Boston, 1891-92; Vice-president of the Pan-American Medical Congress, 1893, and of the Pan-American Medical Congress, Mexico, 1896; Honorary President of the Section of Obstetrics and Gynecology of the Twelfth International Medical Congress, Moscow, Russia, 1897; Member of the Massachusetts Medical Society; Fellow of the American Academy of Medicine; Member of the American Public Health Association. 825 Massachusetts Avenue, Cambridge, Mass.

1890.—*COLES, WALTER, M.D. St. Louis, Mo. 1892.

1892.—†CORDIER, ALBERT HAWES, M.D. Kansas City, Mo. 1900.

1901.—CRILE, GEORGE W., A.M., M.D. Professor of Clinical Surgery in the Western Reserve University Medical College; Surgeon to St. Alexis's Hospital; Associate Surgeon to Lakeside Hospital. 169 Kensington Street, Cleveland, O.

1894.—CROFFORD, THOMAS JEFFERSON, M.D. Professor of Physiology and Clinical Lecturer on Diseases of Women in the Memphis Hospital Medical College; Member of the Southern Surgical and Gynecological Association. *Vice-president*, 1900. 155 Third Street, Memphis, Tenn.

1897.—CUMSTON, CHARLES GREENE, B.M.S., M.D. (Geneva, Switzerland). Assistant Professor of Surgical Pathology, Tufts College Medical School, Boston; Member of the Massachusetts Medical Society; Honorary Member of the Surgical Society of Belgium, and Corresponding Member of the Obstetrical and Gynecological Society of Paris; Corresponding Member of the Association of Genito-urinary Surgeons of France; Corresponding Member of the Pathological Society of Brussels, Belgium;

Corresponding Member of the Electro-therapeutical Society of France. *Vice-president,* 1902. 871 Beacon Street, Boston, Mass.

Founder.—†CUSHING, CLINTON, M.D. San Francisco, Cal. 1900.

1889.—DAVIS, WILLIAM ELIAS B., M.D. Professor of Gynecology and Abdominal Surgery in the Birmingham Medical College; Secretary of the Southern Surgical and Gynecological Association, 1888-1900; formerly Surgeon to the Birmingham Hospital of United Charities; President of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1892; Secretary of the Surgical Section of the American Medical Association, 1891: Honorary President of the Section on Gynecology and Abdominal Surgery of the First Pan-American Medical Congress; Honorary Member of the Medical Society of the State of New York. *Vice-president,* 1895; *Executive Council,* 1897-1900; *President,* 1901. 2031 Avenue G, Birmingham, Ala. [Died February 24, 1903.]

1902.—DEAVER, HARRY CLAY, M.D. Visiting Surgeon to the Episcopal, St. Christopher's, and St. Mary's Hospitals. 1534 North Fifteenth Street, Philadelphia, Pa.

1896.—DEAVER, JOHN BLAIR, M.D. Formerly Assistant Professor of Applied Anatomy at the University of Pennsylvania; Visiting Surgeon to the German Hospital. 1634 Walnut Street, Philadelphia, Pa.

1892.—DORSETT, WALTER BLACKBURN, M.D. Professor of Obstetrics and Gynecology in the Marion Sims-Beaumont College of Medicine; Gynecologist to the Missouri Baptist Sanitarium and Evangelical Deaconess's Hospital; Consulting Gynecologist to the St. Louis City and Female Hospitals. President of the St. Louis Medical Society, 1892. President of the Missouri State Medical Society, 1900. *Vice-president,* 1898. 3941 West Belle Place, St. Louis, Mo.

1889.—DOUGLAS, RICHARD, M.D. Professor of Gynecology and Abdominal Surgery in the Vanderbilt Medical College; President of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1893; Fellow of the British Gynecological Society; President of the Southern Surgical and Gynecological Associa-

tion, 1898. *Vice-president*, 1898. 110 South Spruce Street, Nashville, Tenn.

1901.—DUDLEY, CLIFTON ROGERS, M.D. Instructor in Obstetrics in the Beaumont Hospital Medical College. 903 North Taylor Avenue, St. Louis, Mo.

1892.—DUFF, JOHN MILTON, A.M., M.D., Ph.D. Chairman of the Section on Obstetrics and Diseases of Women in the American Medical Association, 1893; Professor of Obstetrics in the Western Pennsylvania Medical College; Gynecologist to the Western Pennsylvania Hospital; Consulting Surgeon and Gynecologist to the South Side Hospital; Fellow of the American Academy of Medicine; President of the Pittsburg Obstetrical Society, 1891. *Executive Council*, 1898-1900. Horne Office Building, 515 Penn Avenue, Pittsburg, Pa.

1895.—DUNN, B. SHERWOOD, M.D. Officier d'Académie; Corresponding Member of the Société Obstétrique et Gynécologique de Paris; Member of the Société Clinique des Praticiens de France, etc. 26 Broadway, New York.

1898.—DUNN, JAMES C., M.D. Obstetrician to Reineman Maternity Hospital. 208 Winebiddle Avenue, Pittsburg, Pa.

1895.—†DUNN, JAMES HENRY, M.D. Minneapolis, Minn. 1899.

1892.—DUNNING, LEHMAN HERBERT, M.D. Professor of Diseases of Women in the Medical College of Indiana; Consulting Gynecologist to the Indianapolis City Hospital and Dispensary. *Executive Council*, 1899-1902; *Vice-president*, 1900; *President*, 1903. Willoughby Building, 224 North Meridian Street, Indianapolis, Ind.

1895.—EARLE, FRANK BRECKINRIDGE, M.D. Professor of Obstetrics at the College of Physicians and Surgeons. 903 West Monroe Street, Chicago, Ill.

1899.—EASTMAN, THOMAS BARKER, A.B., M.D. Professor of the Medical and Surgical Diseases of Women, Central College of Physicians and Surgeons; Gynecologist to the City Hospital, City Dispensary, and Central Free Dispensary. 331 North Delaware Street, Indianapolis, Ind.

1895.—FERGUSON, ALEXANDER HUGH, M.D. Professor of Surgery at the Chicago Post-Graduate Medical School. Suite 300, Reliance Building, 100 State Street, Chicago, Ill.

1895.—FISH, EDMUND FROST, M.D. Professor of Gynecology in Milwaukee Medical College; Gynecologist to the Trinity and Milwaukee County Hospital; Gynecologist to the Milwaukee Free Dispensary. 507-508 Wells Building, Milwaukee, Wis.

1890.—FREDERICK, CARLTON CASSIUS, B.S., M.D. Clinical Professor of Gynecology in the Medical Department of Buffalo University; Obstetrician and Gynecologist to the Buffalo Woman's Hospital; Obstetrician to the Widows' and Infants' Asylum; Gynecologist to the Erie County Hospital. 64 Richmond Avenue, Buffalo, N. Y.

1891.—GIBBONS, HENRY, JR., A.M., M.D. Dean and Professor of Obstetrics and Diseases of Women and Children in Cooper Medical College; Consulting Physician to the French and the Children's Hospitals. 920 Polk Street, San Francisco, Cal.

1902.—GILLETTE, WILLIAM J., M.D. Professor of Abdominal Surgery and Gynecology in the Toledo Medical College; Surgeon to Robinwood Hospital. 1613 Jefferson Street, Toledo, O.

1895.—GILLIAM, DAVID TOD, M.D. Professor of Gynecology, Starling Medical College; Gynecologist to St. Anthony Hospital; Gynecologist to St. Francis Hospital; Consulting Gynecologist to State Street Dispensary; Member of the American Medical Association, Mississippi Valley Medical Association, and Ohio State Medical Society; Honorary Member of the Northwestern Medical Society; Member and Ex-president of Columbus Academy of Medicine. 70 Winner Avenue, Columbus, O.

1895.—GOLDSPOHN, ALBERT, M.D. Professor of Gynecology, Post-Graduate Medical School; Senior Gynecologist, German Hospital; Attending Gynecologist, Post-Graduate and Charity Hospitals. *Vice-president,* 1901. 519 Cleveland Avenue, Chicago, Ill.

1894.—GRIFFITH, JEFFERSON DAVIS, M.D. Professor of Surgery in the Kansas City Medical College; Surgeon to St. Joseph's Hospital and to the Children's Hospital. President of the Mis-

souri State Medical Association, 1902. Corner Grand Avenue and Thirty-fifth Street, Kansas City, Mo.

1892.—*Haggard, William David, M.D. 1901.

1900.—Haggard, William David, Jr., M.D. Professor of Gynecology, Medical Department University of Tennessee; Professor of Gynecology and Abdominal Surgery, University of the South (Sewanee); Gynecologist to the Nashville City Hospital; President of the Nashville Academy of Medicine; Secretary of the Section on Diseases of Women and Obstetrics, American Medical Association, 1898; Fellow (and Secretary) of the Southern Surgical and Gynecological Association; Member of the Alumni Association of the Woman's Hospital, N. Y. 302 Vine, corner Union Street, Nashville, Tenn.

1889.—Hall, Rufus Bartlett, A.M., M.D. Professor of Gynecology and Clinical Gynecology at the Miami Medical College; Gynecologist to the Presbyterian Hospital; Member of the British Gynecological Association; of the Southern Surgical and Gynecological Association; of the American Medical Association; of the Ohio State Medical Society (President, 1900); of the Cincinnati Academy of Medicine; President of the Cincinnati Obstetrical Society, 1896. *Vice-president*, 1891; *President*, 1900. Berkshire Building, 628 Elm Street, Cincinnati, O.

1902.—Hamilton, Charles Sumner, A.B., M.D. Professor of the Principles of Surgery in Sterling Medical College; Surgeon to Mt. Carmel and Children's Hospitals. 141 North Fourth Street, Columbus, O.

1894.—Hayd, Herman Emilie, M.D., M.R.C.S. Eng. Gynecologist to the Erie County Hospital; Surgeon to the German Hospital. *Vice-president*, 1903. 493 Delaware Avenue, Buffalo, N. Y.

Founder.—*Hill, Hampton Eugene, M.D. 1894.

1891.—Holmes, Josus Billington Sanders, M.D. Professor of Obstetrics in the Southern Medical College; President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member of the American Medical Association. 17 West Cain Street, Atlanta, Ga.

1891.—HOWITT, HENRY, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospital, Guelph; Member of the British and Ontario Medical Association; Medical Health Officer for the City of Guelph. *Vice-president,* 1895. 235 Woolwich Street, Guelph, Ontario, Canada.

1896.—HUGHES, GEORGE MAURICE, M.D. Formerly Physician in Charge of the Obstetrical and Gynecological Department of the Philadelphia Dispensary. 1003 Sutter Street, San Francisco, Cal.

1895.—HUMISTON, WILLIAM HENRY, M.D. Associate Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist-in-chief to St. Vincent's Charity Hospital; Consulting Gynecologist to the City Hospital; President of the Ohio State Medical Society, 1898. *Executive Council.* 1902-1903. 536 Rose Building, Cleveland, O.

1898.—HYDE, JOEL W., M.D. Obstetric Surgeon to St. Mary's Hospital; Consulting Obstetrician to the Long Island College Hospital; Consulting Gynecologist to Central Hospital. 215 Schermerhorn Street, Brooklyn, N. Y.

1892.—†HYPES, BENJAMIN MURRAY, A.M., M.D. St. Louis, Mo. 1900.

1901.—ILL, CHARLES L., M.D. Surgeon to German Hospital; Assistant Gynecologist to St. Michael's and St. Barnabas's Hospitals; Obstetrician to St. Barnabas's Hospital, Newark; Assistant Gynecologist to All Souls' Hospital, Morristown. 188 Clinton Avenue, Newark, N. J.

Founder.—ILL, EDWARD JOSEPH, M.D. Surgeon to the Woman's Hospital; Medical Director of St. Michael's Hospital; Gynecologist and Supervising Obstetrician to St. Barnabas's Hospital; Consulting Gynecologist to the German Hospital and the Bnoth Israel Hospital of Newark, N. J., to All Souls' Hospital, Morristown, N. J., and to the Mountain Side Hospital, Montclair, N. J.; Member of the Southern Surgical and Gynecological Association. Vice-president from New Jersey to the Pan-American Medical Congress of 1893. *Vice-president,* 1893; *President.* 1899; *Executive Council,* 1901-1903. 1002 Broad Street, Newark, N. J.

1897.—INGRAHAM, HENRY DOWNER, M.D. Clinical Professor of Gynecology and Pediatrics, Medical Department of the University of Buffalo; Consulting Gynecologist to the Buffalo Woman's Hospital and to the Erie County Hospital; Consulting Gynecologist to Providence Hospital. 405 Franklin Street, Buffalo, N. Y.

Founder.—*JARVIS, GEORGE CYPRIAN, M.D. Hartford, Conn. 1900.

1894.—JAYNE, WALTER ADDISON, M.D. Professor of Gynecology in the Medical Department of the University of Denver; Consultant in Gynecology, St. Luke's Hospital; Gynecologist to the Arapahoe County Hospital, Denver. 416 McPhee Building, Denver, Col.

1892.—*JELKS, JAMES THOMAS, M.D. Hot Springs, Ark. 1902.

1894.—†JENNINGS, CHARLES GODWIN, M.D. Detroit, Mich. 1901.

1891.—JOHNSTON, GEORGE BEN, M.D. Professor of Gynecology and Abdominal Surgery in the Medical College of Virginia; Surgeon to the Old Dominion Hospital; Physician to St. Joseph's Female Orphan Asylum; Consulting Surgeon to the City Free Dispensary; Member of the American Surgical Association; Vice-president of the Southern Surgical and Gynecological Association, 1892, President 1897; Ex-president of the Richmond Medical and Surgical Society; President of the Virginia State Medical Society, 1897. *Vice-president,* 1897. 407 East Grace Street, Richmond, Va.

1902.—KEEFE, JOHN WILLIAM, M.D. Attending Surgeon to the Gynecological Department of St. Joseph's Hospital; Attending Surgeon to the Rhode Island Hospital; Consulting Surgeon to the Providence Lying-in Hospital. 259 Benefit Street, Providence, R. I.

1900.—KELLY, WEBB J., M.D. Surgeon to the Erie, and to the Cleveland, Columbus, Cincinnati and St. Louis Railways; formerly Professor of Operative Surgery at the Ohio Medical University at Columbus. 110 West Ash Street, Piqua, O.

1893.—LAIDLEY, LEONIDAS HAMLIN, M.D. Professor of Gynecology in the Beaumont Hospital Medical College; Surgeon-in-chief to the Protestant Hospital; Medical Director of the St. Louis World's Fair of 1904. 3538 Washington Avenue, St. Louis, Mo.

1898.—LANGFITT, WILLIAM STERLING, M.D. Surgeon-in-chief to St. John's Hospital. 688 Preble Avenue, Allegheny, Pa.

1901.—LINCOLN, WALTER RODMAN, B.A., M.D. Lecturer in Gynecology, College of Physicians and Surgeons of Cleveland, O. Euclid Heights, Overlook Road, Cleveland, O.

1900.—LINVILLE, MONTGOMERY, A.B., M.D. Surgeon to Slemango Valley Hospital; Surgeon to three lines of Pennsylvania Railways. 35 North Mercer Street, New Castle, Pa.

1890.—LONGYEAR, HOWARD WILLIAMS, M.D. Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-president,* 1893. 271 Woodward Avenue, Detroit, Mich.

Founder.—*LOTHROP, THOMAS, M.D. Buffalo, N. Y. 1902.

1896.—LYONS, JOHN ALEXANDER, M.D. Instructor in Gynecology at the Post-Graduate Medical School; Gynecologist and Lecturer to Nurses at the Chicago Hospital. 4118 State Street, Chicago, Ill.

1891.—MACDONALD, WILLIS GOSS, M.D. Lecturer on Operative Surgery and Instructor in Abdominal Surgery in Albany Medical College; Surgeon to the Out-door Department of the Albany Hospital. President of the Medical Society of the State of New York, 1900. 27 Eagle Street, Albany, N. Y.

1901.—MCCANDLESS, WILLIAM A., A.M., M.D. Chief Surgeon St. Mary's Infirmary; Visiting Surgeon to the City Hospital; Professor of Special and Clinical Surgery, Marion Sims-Beaumont College of Medicine. 3857 Westminster Place, St. Louis, Mo.

1891.—*McCann, James, M.D. Pittsburg, Pa. 1893.

1898.—McCann, Thomas, M.D. Professor of Surgery, etc., Western Pennsylvania Medical College; Visiting Surgeon, Western Pennsylvania Hospital. 5745 Centre Street, Pittsburg, Pa. [Died May 9, 1903.]

1894.—†McGuire, Edward, M.D. Richmond, Va. 1900.

Founder.—McMurtry, Lewis Samuel, A.M., M.D. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association. *Executive Council,* 1891-1892, 1895-1903; *President,* 1893. 1912 Sixth Street, Louisville, Ky.

Founder.—Manton, Walter Porter, M.D. Professor of Clinical Gynecology and Adjunct Professor of Obstetrics, Detroit College of Medicine; Gynecologist to Harper Hospital and the Eastern Michigan Asylum for the Insane; Vice-president of Medical Board of the Woman's Hospital and Foundlings' Home; Consulting Gynecologist to the Northern Michigan Asylum and St. Joseph's Retreat; Gynecic Surgeon to the House of the Good Shepherd; President of the Detroit Academy of Medicine, 1892-1894; President of the Detroit Gynecological Society, 1890; Fellow of the British Gynecological Society; Fellow of the Royal Microscopical Society and of the Zoölogical Society of London. *Vice-president,* 1894. 32 Adams Avenue, W. Detroit, Mich.

Founder.—†Maxwell, Thomas Jefferson, M.D. Keokuk, Iowa. 1902.

1893.—*Michael, Jacob Edwin, A.M., M.D. Baltimore, Md. 1895.

Founder.—Miller, Aaron Benjamin, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of the Good Shepherd and Dispensary. *Vice-president,* 1899. 326 Montgomery Street, Syracuse, N. Y.

1896.—*Mooney, Fletcher D., M.D. St. Louis, Mo. 1897.

1890.—MORRIS, ROBERT TUTTLE, A.M., M.D. Professor of Surgery in the New York Post-Graduate Medical School and Hospital. *Vice-president,* 1892. 58 West Fifty-sixth Street, New York, N. Y.

Founder.—*MOSES, GRATZ ASHE, M.D. St. Louis, Mo. 1901. (See Honorary Fellows.)

1894.—MURPHY, JOHN BENJAMIN, A.M., M.D. Professor of Surgery in the College of Physicians and Surgeons and in the Post-Graduate Medical College; Attending Surgeon to the Cook County Hospital and to Alexander Hospital. Residence, 3152 Michigan Avenue; Office, 400 Reliance Building, 100 State Street, Chicago, Ill.

Founder.—MYERS, WILLIAM HERSCHEL, M.D. Professor of Clinical and Abdominal Surgery, Fort Wayne College of Medicine; Surgeon to St. Joseph's Hospital; Member of the American and the British Medical Associations; Member of the Pathological Society of London; Member of the International Congress of Gynecologists and Obstetricians; Member of the Chicago Medical Society. *Vice-president,* 1890. 523 West Wayne Street, Fort Wayne, Ind.

1897.—NICHOLS, WILLIAM R., M.D. Winnipeg, Canada.

1896.—NOBLE, GEORGE HENRY, M.D. Gynecologist to the Grady Hospital; Secretary of the Section on Obstetrics and Gynecology of American Medical Association, 1897; Member of the Southern Surgical and Gynecological Association. 131 and 133 South Pryor Street, Atlanta, Ga.

1889.—PAINE, JOHN FANNIN YOUNG, M.D. Professor of Obstetrics and Gynecology in the School of Medicine, University of Texas; Obstetrician and Gynecologist to the John Sealy Hospital; President of the Texas State Medical Association, 1888; Vice-president of the Section on Public and International Hygiene in the Ninth International Medical Congress; Member of the American Medical Association and of the Southern Surgical and Gynecological Association. S. E. corner Broadway and Twenty-sixth Street, Galveston, Texas.

1899.—PANTZER, HUGO O., M.D. Gynecologist to the City Hos-

pital and City Dispensary; Consulting Gynecologist to the Deaconess's Hospital and to the Indiana State Hospital. 316 East Michigan Street, Indianapolis, Ind.

1890.—PEARSON, WILLIAM LIBBEY, M.D. 713 Union Street, Schenectady, N. Y.

1891.—PECK, GEORGE SHERMAN, M.D. Consulting Surgeon to the Youngstown City Hospital. *Vice-president,* 1896. 26 West Federal Street, Youngstown, O.

1899.—PFAFF, ORANGE G., M.D. Adjunct Professor of Obstetrics and Diseases of Women in the Medical College of Indiana; Gynecologist to the City, Deaconess's, and St. Vincent's Hospitals. 1337 North Pennsylvania Street, Indianapolis, Ind.

1898.—PORTER, MILES F., M.D. Ex-president Indiana State Medical Society. *Vice-president,* 1902. 47 West Wayne Street, Fort Wayne, Ind.

1902.—PORTER, WILLIAM DANIEL, A.M., M.D. 2531 Gilbert Avenue, Cincinnati, O.

Founder.—POTTER, WILLIAM WARREN, M.D. Consulting Gynecologist to the Woman's Hospital; Consulting Surgeon to the Buffalo General Hospital; President and Examiner in Obstetrics, New York State Medical Examining and Licensing Board; Chairman of Section of Obstetrics and Diseases of Women, American Medical Association, 1890; President of the Buffalo Obstetrical Society, 1884-1886; Member of the Southern Surgical and Gynecological Association; President of the Medical Society of the State of New York, 1891; Executive President of the Section of Gynecology and Abdominal Surgery, First Pan-American Medical Congress (1893). *Secretary,* 1888-1903. 284 Franklin Street, Buffalo, N. Y.

1891.—*PRAEGER, E. ARNOLD, M.D. Los Angeles, Cal. 1898.

Founder.—PRICE, JOSEPH, M.D. Physician-in-charge of the Obstetrical and Gynecological Department of the Philadelphia Dispensary; Member of the Southern Surgical and Gynecological Association; Honorary Fellow of the Medical Society of the State of New York; Honorary Fellow of the South Carolina Medical Society; Honorary Fellow of the Virginia Medical Society; Member of the British Gynecological Association and of

the Edinburgh Obstetrical Society. *Executive Council,* 1894-1895; *President,* 1896. 241 North Eighteenth Street, Philadelphia, Pa.

Founder.—REED, CHARLES ALFRED LEE, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Association; Fellow of the British Gynecological Society; President of the American Medical Association, 1901. *Executive Council,* 1890-1897; *President,* 1898. Rooms 61 and 62, The Groton, N. E. corner Seventh and Race Streets, Cincinnati, O.

1896.—*RHETT, ROBERT BARNWELL, JR., M.D. Charleston, S. C. 1901.

1890.—RICKETTS, EDWIN, M.D. Professor of Abdominal Surgery and Gynecology at the Cincinnati Polyclinic; Member of the American and British Medical Association; Member of the Southern Surgical and Gynecological Association. *Vice-president,* 1899; *Executive Council,* 1901, 1903; *President,* 1902. 408 Broadway, Cincinnati, O.

1889.—*ROHÉ, GEORGE HENRY, M.D. Baltimore, Md. 1899.

1892.—ROSENWASSER, MARCUS, M.D. Dean and Professor of Diseases of Women and Abdominal Surgery in the University of Wooster; Gynecologist to the Cleveland Hospital for Women and Children; Consulting Gynecologist to the City Hospital; Member of the American Medical and Ohio State Medical Associations. *Vice-president,* 1903. 722 Woodland Avenue, Cleveland, O.

1890.—ROSS, JAMES FREDERICK WILLIAM, M.D., L.R.C.P. (Eng.). Gynecologist to the Toronto General Hospital; Surgeon to the Woman's Hospital; Lecturer in Clinical Gynecology at the University of Toronto. *Executive Council,* 1892-1896; *President,* 1897. 481 Sherbourne Street, Toronto, Ont., Canada.

1902.—RUNYAN, JOSEPH PHINEAS, M.D. Division Surgeon to the Choctaw, Oklahoma and Gulf Railroad; Secretary of the Arkansas State Medical Society. 1514 Schiller Avenue, Little Rock, Ark.

1901.—SCOTT, N. STONE, A.M., M.D. Professor of Surgery, College of Physicians and Surgeons, Cleveland; Consulting Surgeon to City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out-patient Department of Cleveland General Hospital. 531 Prospect Avenue, Cleveland, O.

1895.—SELLMAN, WILLIAM ALFRED BELT, M.D. Professor of the Diseases of Women and Children at the Baltimore University School of Medicine; Member of the Medical and Chirurgical Faculty of Maryland; also of the Baltimore Medical and Surgical Association; the Gynecological and Obstetrical Association of Baltimore; the Clinical Society; the Baltimore Journal Club; the American Medical Association, etc. 5 East Biddle Street, Baltimore, Md.

1890.—SEXTON, JOHN CHASE, A.M., M.D. *Executive Council,* 1894; *Vice-president,* 1897. Rushville, Ind.

1889.—SEYMOUR, WILLIAM WOTKYNS, A.B., M.D. Surgeon to the Samaritan Hospital, Troy, N. Y.; formerly House Surgeon of the Boston City Hospital; Member of the American Medical Association; Fellow of the New York State Medical Association; Member of the British Medical Association. *Executive Council,* 1892-1893. 105 Third Street, Troy, N. Y.

1902.—SIMONS, MANNING, M.D. Professor of Clinical Surgery in the Medical College of the State of South Carolina; Surgeon to St. Francis Xavier's Infirmary, and to the City Hospital. 22 Rutledge Avenue, Charleston, S. C.

1899.—SIMPSON, FRANK FARROW, A.B., M.D. Assistant Gynecologist to Mercy Hospital. 524 Penn Avenue, Pittsburg, Pa.

1901.—SKEEL, ROLAND EDWARD, M.D. Professor of Obstetrics in Cleveland College of Physicians and Surgeons; Consulting Obstetrician to the City Hospital; Obstetrician to the Cleveland General Hospital. 1156 Pearl Street, Cleveland, O.

1891.—SMITH, CHARLES NORTH, M.D. Professor of Obstetrics and Clinical Gynecology in the Toledo Medical College; Gynecologist to St. Vincent's Hospital. 234 Michigan Street, Toledo, Ohio.

1901.—STAMM, MARTIN, M.D. Professor of Operative and Clinical Surgery in the College of Physicians and Surgeons, Cleveland. 316 Napoleon Street, Fremont, O.

1902.—STARK, SIGMAR, M.D. Professor of Obstetrics and Clinical Gynecology in the Cincinnati College of Medicine and Surgery; Gynecologist to the Jewish Hospital. 1108 East McMillan Street, Cincinnati, O.

1895.—STEELE, DANIEL ATKINSON KING, M.D. President and Professor of the Principles and Practice of Surgery at the College of Physicians and Surgeons; Attending Surgeon at the Chicago, Wesley, and Post-Graduate Hospitals; Consulting Surgeon at the Palmer Memorial Hospital, Janesville, Wis. 2920 Indiana Avenue, Chicago, Ill.

Founder.—*STORRS, MELANCTHON, A.M., M.D. Hartford, Conn. (See Honorary List, 1899.) 1900.

1894.—†STOVER, CHARLES, M.D. Amsterdam, N. Y. 1901.

1899.—SWOPE, LORENZO W., M.D. Surgeon to the Consolidated Traction Company; Assistant Surgeon to the West Pennsylvania Hospital. 3609 Forbes Street, Pittsburg, Pa.

1894.—†TAPPEY, ERNEST TAYLOR, A.M., M.D. Detroit, Mich. 1899.

1901.—TATE, MAGNUS ALFRED, M.D. Professor of Diseases of Children and Embryology at the Cincinnati College of Medicine and Surgery. 361 East Third Street, Cincinnati, O.

1894.—†TAYLOR, HUGH MCGUIRE, M.D. Richmond, Va. 1901.

Founder.—†TAYLOR, WILLIAM HENRY, M.D., Ph.D. Cincinnati, O. 1898.

1890.—THOMAS, GEORGE GILLETT, M.D. Ex-president Medical Society of the State of North Carolina. Wilmington, N. C.

1898.—†THOMAS, JOSEPH DIO, M.D. Pittsburg, Pa. 1900.

1895.—THOMPSON, FRANK DANIEL, M.D. Professor of Gynecology in the Medical Department of Fort Worth University. 412 Adams Street, Fort Worth, Texas.

1895.—TOMPKINS, CHRISTOPHER, M.D., Ph.D. Professor of Obstetrics and Dean of the Medical College of Virginia; Obstetrician to the Old Dominion Hospital; Member of the Southern Surgical and Gynecological Association. 116 East Franklin Street, Richmond, Va.

Founder.—*TOWNSEND, FRANKLIN, A.M., M.D. Albany, N. Y. 1895.

Founder.—VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery in the Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association; Fellow of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Boston Gynecological Society. *Executive Council,* 1889-1891, 1895-1903; *President,* 1892. 28 Eagle Street, Albany, N. Y.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association. *Vice-president,* 1901. 712 Upper Fourth Street, Evansville, Ind.

1889.—WENNING, WILLIAM HENRY, A.M., M.D. Professor of Obstetrics in the Woman's Medical College; Gynecologist to St. Mary's Hospital. 722 Laurel Street, Cincinnati, O.

Founder.—WERDER, XAVIER OSWALD, M.D. Professor of Gynecology at the Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania); Consulting Gynecologist at the Allegheny General Hospital; Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis's Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer,* 1888-1903. 524 Penn Avenue, Pittsburg, Pa.

1896.—WESTMORELAND, WILLIS FOREMAN, M.D. Professor of Surgery at the Atlanta Medical College. Equitable Building, Atlanta, Ga.

1895.—WHEATON, CHARLES AUGUSTUS, M.D. Professor of Clinical Surgery in the University of Minnesota. 301 Summit Avenue, St. Paul, Minn.

1897.—WHITBECK, JOHN W., M.D. Gynecologist to the Rochester City Hospital; Commissioner of the Board of Health. 322 East Avenue, Rochester, N. Y.

1897.—WILLIAMS, HENRY T., M.D. Attending Surgeon, City Hospital; Attending Surgeon, St. Mary's Hospital; Attending Surgeon, Monroe County Penitentiary; Consulting Surgeon to the Home for the Friendless. 274 Alexander Street, Rochester, N. Y.

1902.—WILLIAMS, JOSEPH JOHN GURNEY, M.D. Gynecologist to the Philadelphia Dispensary; Consultant in the Obstetrical Department of the Philadelphia Dispensary. 331 South Thirteenth Street, Philadelphia, Pa.

1900.—ZINKE, ERNST GUSTAV, M.D. Professor of Obstetrics and Clinical Midwifery in the Medical College of Ohio, University of Cincinnati; Obstetrician and Gynecologist to the German Hospital; Obstetrician to the Maternity Hospital. 13 Garfield Place, Cincinnati, O.

Total, one hundred and nine Ordinary Fellows.

MINUTES OF THE PROCEEDINGS

AT THE

FIFTEENTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD IN THE

BANQUET HALL OF THE RALEIGH,

Washington, D. C.,

SEPTEMBER 16, 17, AND 18, 1902.

FIFTEENTH ANNUAL MEETING.

WASHINGTON, D. C., SEPTEMBER 16, 17, AND 18, 1902.

The following-named Fellows were present:

ABRAMS, EDWARD T.	DOLLAR BAY.
BAKER, WASHINGTON H.	PHILADELPHIA.
BALDWIN, JAMES F.	COLUMBUS.
BONIFIELD, CHARLES L.	CINCINNATI.
BOSHER, LEWIS C.	RICHMOND.
BRANHAM, JOSEPH H.	BALTIMORE.
CARSTENS, J. HENRY	DETROIT.
CHASE, WALTER B.	NEW YORK.
CROFFORD, THOMAS J.	MEMPHIS.
CUMSTON, CHARLES G.	BOSTON.
DAVIS, WILLIAM E. B.	BIRMINGHAM.
DEAVER, HARRY C.	PHILADELPHIA.
DEAVER, JOHN B.	PHILADELPHIA.
DORSETT, WALTER B.	ST. LOUIS.
DOUGLAS, RICHARD	NASHVILLE.
DUNNING, LEHMAN H.	INDIANAPOLIS.
GILLETTE, WILLIAM J.	TOLEDO.
GOLDSPOHN, ALBERT	CHICAGO.
HALL, RUFUS B.	CINCINNATI.
HAMILTON, CHARLES S.	COLUMBUS.
HAYD, HERMAN E.	BUFFALO.
HOWITT, HENRY	GUELPH.
ILL, CHARLES L.	NEWARK.
LANGFITT, WILLIAM S.	ALLEGHENY.
LINVILLE, MONTGOMERY	NEW CASTLE.
LONGYEAR, HOWARD W.	DETROIT.
MACDONALD, WILLIS G.	ALBANY.
McMURTRY, LEWIS S.	LOUISVILLE.
MANTON, WALTER P.	DETROIT.
MURPHY, JOHN B.	CHICAGO.
PFAFF, ORANGE G.	INDIANAPOLIS.
PORTER, MILES F.	FORT WAYNE.
PORTER, WILLIAM D.	CINCINNATI.
POTTER, WILLIAM W.	BUFFALO.
PRICE, JOSEPH	PHILADELPHIA.
RICKETTS, EDWIN	CINCINNATI.
ROSS, JAMES F. W.	TORONTO.

SELLMAN, WILLIAM A. B.	BALTIMORE.
SEXTON, JOHN C.	RUSHVILLE.
SEYMOUR, WILLIAM W.	TROY.
SIMPSON, FRANK F.	PITTSBURG.
STAMM, MARTIN	FREMONT.
STERNBERG, GEORGE M.	WASHINGTON.
TATE, MAGNUS A.	CINCINNATI.
THOMPSON, FRANK D.	FORT WORTH.
WILLIAMS, J. J. GURNEY	PHILADELPHIA.

Letters or messages of regret were received from several of the Fellows, as follows:

Honorary.—A. Cordes, Geneva; J. Halliday Croom, Edinburgh; William A. Freund, Berlin; James McFadden Gaston, Atlanta; G. Leopold, Dresden; Joseph McDowell Mathews, Louisville; B. S. Schultze, Jena; William Japp Sinclair, Manchester; J. Knowsley Thornton, Cambridge; and F. von Winckel, Munich.

Ordinary.—Augustus P. Clarke, George W. Crile, B. Sherwood Dunn, Alexander H. Ferguson, Carlton C. Frederick, Edmund F. Fish, D. Tod Gilliam, Jefferson D. Griffith, William D. Haggard, William H. Humiston, Joel W. Hyde, Edward J. Ill, Henry D. Ingraham, Walter A. Jayne, George Ben Johnston, John A. Lyons, A. B. Miller, Robert T. Morris, Charles A. L. Reed, M. Rosenwasser, N. Stone Scott, A. Vander Veer, Edwin Walker, William H. Wenning, X. O. Werder, Willis F. Westmoreland, and E. Gustav Zinke.

On recommendation of the Executive Council the following-named physicians were invited to attend the sessions and participate in the discussions:

Louis J. Battle,	Washington, D. C.
J. Wesley Bovée,	" " "
G. M. Brumbaugh,	" " "
Harry F. Clark,	" " "
Loren B. Johnson,	" " "
Joseph Taber Johnson,	" " "
John Kelley, Jr.,	" " "
D. G. Lewis,	" " "
L. Fleet Luckett,	" " "
George J. Lochboehler,	" " "
Camillo H. Machinek,	" " "
Thomas E. McArdle,	" " "
C. C. Pursell,	" " "

A. B. Richardson,	Washington, D. C.
I. S. Stone,	" " "
A. D. Vander Veer,	" " "
J. R. Wellington,	" " "
William C. Woodward,	" " "
Brooks F. Beebe,	Cincinnati.
George B. Broad,	Syracuse.
Charles E. Congdon,	Buffalo.
Guilherme Ellis,	S. Paulo, Brazil.
Frank P. Foster,	New York.
Floyd J. Gregory,	Keysville, Va.
Emil E. Guenther,	Newark, N. J.
H. H. Hartung,	Boston.
Horace M. Lane,	S. Paulo, Brazil.
I. N. Love,	New York.
T. G. McGuire,	Parkersburg, W. Va.
R. G. Miles,	New Castle, Pa.
Joseph A. Mudd,	Hyattsville, Md.
William A. Rolfe,	Boston.
O. M. Willis,	Marietta, O.
B. T. Whitmore,	New York.

FIRST DAY.—*Tuesday, September 16, 1902.*

Morning Session.—The Association was called to order by the President, Dr. Edwin Ricketts, of Cincinnati, at 9:30 o'clock, who said: "We enjoy the special privilege this morning of having with us a gentleman who will welcome us to this magnificent city of distances. He is well known to all of you, in fact to every physician in this land, and I now take great pleasure in asking Dr. Potter to escort to the platform Surgeon-General George M. Sternberg." (Applause.)

ADDRESS OF WELCOME.

Surgeon-General Sternberg addressed the Association as follows:

MR. PRESIDENT AND GENTLEMEN: It gives me great pleasure to meet you here this morning and to say a word or two of welcome. I think you have done well to select Washington as your place of meeting. We are all very proud of the Capital City, and I have no doubt many of you know it very well. Those who do not will do well to take a little time after the meeting in look-

ing about. It is improving constantly, and it is a capital of which we may all be proud. Dr. Potter and myself remember in the days of 1861 when it was a very different-looking place; when the beautifully paved streets which we see now were mud-holes. At that time, over forty-one years ago, I moved across the river here one day with Ellsworth, who took possession of Alexandria. In a rowboat, with a friend, I went across to see what had been done, we had just taken possession of the other side of the river, driving the Confederates out. Then I had some trouble in getting back. (Laughter.) I had no business there; I was arrested. But I am not here to give you war reminiscences; I might keep you until the night session if I were to do so.

You all know that Washington is a scientific centre as well as a beautiful city. We have here in the various departments of the government a large number of scientific men engaged in research work under government auspices, and most of them belong to a club here known as "The Cosmos Club." I am at present the president of the Cosmos Club, and I take this opportunity to invite the Fellows of this Association to make themselves at home at that club. You will be very welcome there, and while a large number of our members are still out of the city, if you will drop into the club house you will find a number of journals and whatever else you may desire. We shall be very glad to have you take advantage of the Cosmos Club while you are in the city.

Washington is a scientific centre, not only for research in geological survey and the coast survey, for scientific work in the Agricultural Department, the Army Medical Museum, and the Marine Hospital Service, but it is also a place where physicians are recognized at the present day as scientific men.

We have here the Academy of Sciences, which was organized only a couple of years ago, made up of the men I have spoken of, who belong to the various scientific departments, and of members of the medical profession residing here, also corresponding members from different parts of the country, men of eminence in the medical profession; and I think it is rather a new departure for scientific societies of that character to elect medical men because of their scientific attainments in their own profession. The popular idea of a scientific man has been one that hunted bugs with his microscope, or one that worked along such lines; but the men who have advanced medical science are properly recognized

as leaders of men who should be entitled to every honor that can be conferred upon men of science. (Applause.)

I am at present moving into a new house, and regret very much that I am not already settled, so that I might show you some hospitality. On this account, too, I will not be able to attend your sessions, though I shall be happy to join you at the annual dinner on Wednesday evening. I have looked over your program and I believe that you are going to have a very successful meeting. It is certainly a very satisfactory program.

Again I extend to you a cordial welcome to the City of Washington. (Applause.)

RESPONSE BY THE PRESIDENT.

SURGEON-GENERAL STERNBERG: We fully appreciate the kind remarks that you have made in extending us a welcome to our own city, a thing that is rather unusual. We come not with the pomp of heraldry or the boast of power, or as victorious armies to the stirring music of the fife and drum, but as men who are wedded to a profession whose greatest love is to serve man in his extremity. (Applause.)

This Association is composed of men from many parts of this country. It is truly American, and it is with pride that we find the Union Jack flying with our glorious Stars and Stripes, for we have men, members of this Association, who come from that vast region of the North, yet whom it is a pleasure to have with us.

This is an Association of workers, we are proud to say to you; and while our banner is flung from the inner wall, it is no less important that it should be flung from the outer. We appreciate what you have said. We are here for business, and I will briefly say, in return for all your kind words, that we thank you most heartily. (Applause.)

PRESENTATION OF A NEW GAVEL.

THE PRESIDENT.—Through the kindness of Dr. John C. Boyle, of Danville, Ky., and Dr. R. L. Dunlap, of Greenfield, O., I am able to present to you this gavel.

The head is made from wood taken from one of the poplar girders in the old home of Ephraim McDowell, and has the marks of the builder's strip-saw. It was this house that sheltered Mary

Crawford after the fatigue of her long journey on horseback, and it was under its roof that she was successfully operated on by McDowell, being restored to health within the limited and prescribed time of to-day. The handle was made from hickory wood taken from one of the joists in the double log house near Greenfield, Ohio, in which Alexander Dunlap performed his first ovariotomy, the subject being Susan Rosen, September 17, 1843, just fifty-nine years ago to-morrow. This handle, fortunately, bears one mark as coming from the edge of the woodman's axe.

Will you accept this memento in the tenderest memories of these men who were famous? They believed in God's pure air and sunlight in obtaining the desired results following any ovariotomy.

As the sounds of this gavel are to guide your deliberations, may you not forget the trials, the labors, the journeyings, the vicissitudes, the utter disappointments, the hopes, the sorrows, and final triumphs of these heroes of an immortal past. (Applause.)

It was here in Washington that the birth of this Association took place fourteen years ago. It was a welcomed guest to many, while there were misgivings and doubts coming from some men standing high in the American gynecological and obstetrical world. During these fourteen years of our existence marked progress has been made in the social, political, and religious worlds. American abdominal and gynecological surgery has markedly forged ahead, and the efforts as coming from this Association have won the praise of its severest critics and ablest competitors. Young and active men founded this organization; young and active men have purposely been added to its membership. This has been our strength. With this our future is to be assured.

I desire to call your attention to the pathological exhibit, with its short reports and photographs, justly worthy of your closest inspection and careful consideration. You have but to glance over the program to be convinced that its titles, with abstracts, are suggestive of much thought in the preparation of the papers offered by our colaborers in the work. We desire, if possible, that these papers be read and discussed; and, in order that this may be accomplished, we will ask for a fifteen-minute ruling for

reading, and five for discussion. With this granted, it shall be faithfully observed.

To every physician who honors us with his presence for a part or all of our session we extend a most cordial invitation to participate in the discussions, under the rules.

The success of this meeting rests with you. "Strike your flints in seeking for truth," as honest and worthy foemen that you are. Bear with me in my attempts at guiding your deliberations, and rest assured that in so doing I bear no man ill will.

Our Secretary has arranged that your papers are to be published in the regular channel. Will you kindly keep this in mind?

It only remains for me to declare that the fifteenth annual session of the American Association of Obstetricians and Gynecologists is now commenced. (Applause.)

At the close of the presentation of the gavel by the President, Dr. L. S. McMurtry rose and said: "As a part of the exercises just drawing to a close, I move that the Association accept the handsome gavel that has been presented by the President, and in so doing return to him the assurances of our appreciation of the gavel and of the very noble words spoken by him in presenting it." Carried.

Papers were then read as follows:

1. "Pelvic Disease in the Young and Unmarried," by Charles L. Bonifield, of Cincinnati.

Discussed by Drs. McMurtry, Davis, Hayd, Sellman, Ross, Chase, Macdonald, and the discussion closed by the essayist.

2. "Extirpation of the Gall-bladder through the Lumbar Incision, with Report of a Case," by Walter P. Manton, of Detroit.

Discussed by Drs. Hall, Davis, Ross, Dunning, Price, Porter (Miles F.), and the discussion closed by the essayist.

3. "The Importance of an Apprenticeship in Operative Gynecology," by J. J. Gurney Williams, of Philadelphia.

Discussed by Drs. Cumston, Longyear, McMurtry, Hall, and, in closing, by the essayist.

On motion of Dr. Cumston the Association then took a recess until 2 P.M.

Afternoon Session, 2 o'clock.

The President in the chair.

4. "Ice Following Abdominal Sections," by F. F. Simpson, of Pittsburg.

Discussed by Drs. Hayd, Baldwin, Longyear, Cumston, Bonifield, and the discussion closed by the essayist.

5. "Two Fatal Cases of Tetanus Following Abdominal Section due to Infected Ligatures; With a Plea for the Angiotribe in Abdominal Surgery," by Walter B. Dorsett, of St. Louis.

Discussed by Drs. Longyear, Goldspohn, Murphy, Macdonald, Baker, Cumston, Manton, and the discussion closed by the essayist.

6. "Some Problems in Exploratory Laparatomy," by Walter B. Chase, of the Borough of Brooklyn, New York City.

Discussed by Dr. Goldspohn, and the discussion closed by the essayist.

7. "General Considerations of Drainage in Abdominal and Pelvic Surgery," by Joseph Price, of Philadelphia.

8. "Ruptured Pus Tubes," by Charles Greene Cumston, of Boston

9. "Pelvic Abscess and its Treatment," by Herman E. Hayd, of Buffalo.

10. "The Vaginal Route for Operations on the Uterus and Appendages, with Cases," by J. H. Branham, of Baltimore.

These four papers were discussed conjointly by Drs. Dorsett, Bonifield, Price, Macdonald, Goldspohn, Murphy, Carstens, Hall, Dunning, Baldwin, Longyear, and the discussion closed by the essayists.

11. "A Résumé of the Rationale and Technique of Bi-inguinal Celiotomy for Complicated Aseptic Retroversions of the Uterus; and a Further Report of its Remote Results," by A. Goldspohn, of Chicago.

On motion, owing to the lateness of the hour, the discussion on Dr. Goldspohn's paper was postponed until Wednesday morning.

The Association then took a recess until 9:30 A.M. Wednesday.

SECOND DAY.—*Wednesday, September 17, 1902.*

Morning Session, 9:30 o'clock.—The President in the chair.

The paper of Dr. Goldspohn was discussed by Drs. Hayd. Longyear, Deaver, Murphy, Price, and, in closing, by the essayist.

The next order was a symposium on appendicitis, although each paper was discussed separately.

12. "The Irrational Starvation Treatment of Appendicitis," by John B. Deaver, of Philadelphia.

Discussed by Drs. Baker, McMurtry, Hall, Thompson, Beebe, Porter (Miles F.), Bonifield, Murphy, Macdonald, Price, Carstens, and the discussion closed by Dr. Deaver.

13. "Surgical Relations that the Appendix Region or Zone Bears to Pelvic Suppuration and Operative Complications," by Joseph Price, of Philadelphia.

Discussed by Dr. Hayd, and, in closing, by Dr. Price.

At this juncture the chair was taken by the First Vice-president, Dr. Charles Greene Cumston, of Boston. The President then delivered his address. He selected for his subject, "Our Shortcomings: Let us Reason Together."

On motion of Dr. W. E. B. Davis a vote of thanks was extended to the President for his admirable address.

The Association then took a recess until 2:30 o'clock P.M.

Afternoon Session, 2.30 o'clock.

The President in the chair.

14. "Unusual Cases of Appendicitis," by Miles F. Porter, of Fort Wayne.

Discussed by Drs. Baker and Sexton.

15. "Four Cases Illustrating the Difficulties of Diagnosticating Appendicitis," by William Wotkyns Seymour, of Troy.

Discussed by Drs. Howitt, Baldwin, Porter, Davis, Carstens, Baker, Chase, Porter (Miles F.), Dunning, Manton, and the discussion closed by the essayist.

16. "Intrauterine Fibroids Complicating Pregnancy, and Retained Placenta Associated with Intrauterine Fibroids Complicating Pregnancy," by Magnus A. Tate, of Cincinnati.

Discussed by Drs. Dunning, Carstens, Baldwin, Manton, Bonifield, Porter (William D.), Abrams, Linville, and the discussion closed by the essayist.

17. "Abdominal Section During Pregnancy," by J. Henry Carstens, of Detroit.

Discussed by Drs. Ricketts, Gillette, Porter (Miles F.), McMurtry, and, in closing, by the essayist.

18. "Deciduoma Malignum, with Report of a Case," by L. S. McMurtry, of Louisville.

Discussed by Drs. Carstens, Manton, Baldwin, Branham, and the discussion closed by the essayist.

On motion the Association took a recess until Thursday, 9:30 o'clock.

THIRD DAY.—*Thursday, September 18, 1902.*

Morning Session, 9:30 o'clock.—The President in the chair.

19. "Perforating Ulcer of the Duodenum," by John B. Murphy and J. M. Neff, of Chicago.

Discussed by Drs. Porter (Miles F.), Dunning, Stamm, Ricketts, and the discussion closed by Dr. Murphy.

20. "Report of a Few Cases of Operation for Peritoneal Tuberculosis, with Remarks," by Rufus B. Hall, of Cincinnati.

Discussed by Drs. Murphy, Carstens, Dorsett, Porter (Miles F.), Baldwin, Bonifield, Chase, and the discussion closed by Dr. Hall.

21. "Carcinoma of the Cervix Uteri: A Summary Report of the Author's Sixty-two Cases Operated upon by Hysterectomy, with Remarks," by L. H. Dunning, of Indianapolis.

22. "Surgical Treatment of Perforated Gastric Ulcer with General Infection of Peritoneal Cavity: Notes of a Second Successful Case," by Henry Howitt, of Guelph.

Discussed by Drs. Dorsett, Stone (Washington, D. C.), Porter (Miles F.), and the discussion closed by the essayist.

The retiring President, Dr. Ricketts, said: "This closes the program for this meeting. I want in a few words to express to you my appreciation for the kind consideration I have received at your hands. The year's work has to me been one of pleasure; it has been one in which I have taken great pride; it has been one that has afforded me great profit. The letters received from those who were disappointed at the last moment in attending this meeting bear the richest testimony of their fidelity to the Association.

"In closing, I feel that the future of this Association is to be greater than it has been in the past. I feel that by coming together every year, as we have done, and with the addition of young men to our ranks who show an aggressive spirit, there is still a great future for this Association. I know that when a man reaches fifty or fifty-five years of age he is one of two things: he has been a great success, or else he is disgusted with the world, and if he has been a great success he is likely to become lazy.

"In introducing to you our newly-elected President, I want to say that he has been one of our most earnest workers. He stands out in bold relief in anything he undertakes. We have always relied upon him; we have depended on him, and I am only sorry we cannot have a larger attendance on the last day, which has always been not second to any of the other two. Gentlemen, I introduce to you a man who has done a vast amount of work in his special line. He is well known at home and abroad, and it affords me the greatest pleasure to ask Dr. Carstens to conduct Dr. L. H. Dunning, of Indianapolis, to the rostrum." (Applause.)

Dr. Dunning, in accepting the Presidency, said: "Mr. Chairman and Fellows of the Association: I have little to say. I desire, however, to express my gratitude to you for having conferred this great honor upon me. I desire also to say that I shall endeavor to rival our retiring President in energy, good cheer, hopefulness, and, finally, in dignity and efficiency of work. If I succeed in this it will be success indeed.

"Finally, I wish to say that one of the greatest pleasures of my life will be to see you all at Chicago, with papers, with good cheer, with enthusiasm and earnestness for work. Again I thank you." (Loud applause.)

On motion, the Association then adjourned, to meet in Chicago September 22, 23, and 24, 1903.

WILLIAM WARREN POTTER,
Secretary.

EXECUTIVE SESSIONS.

Tuesday, September 16, 1902.

The President, Dr. Edwin Ricketts, in the chair.

On behalf of the Executive Council, the Secretary presented a list of candidates for Fellowship, and the Association then elected by ballot the following-named candidates:

Edward T. Abrams, Dollar Bay, Mich.; William J. Gillette, Toledo, O.; Joseph P. Runyan, Little Rock, Ark.; William D. Porter, Cincinnati, O.; Charles S. Hamilton, Columbus, O.; Manning Simons, Charleston, S. C.; J. J. Gurney Williams, Philadelphia, Pa.; John William Keefe, Providence, R. I.; Sigman Stark, Cincinnati, O.; Harry C. Deaver, Philadelphia.

The Secretary, on behalf of the Executive Council, submitted a list of names of members of the medical profession of Washington, D. C., and of other cities, who were nominated by the Committee of Arrangements and invited to participate in the proceedings as members by invitation.

The Secretary stated that he had received letters of regret, also telegrams, from absent Fellows, and, on motion of Dr. Dorsett, the reading of these letters and telegrams was dispensed with and the list ordered published in the Transactions.

The Secretary submitted the accounts of the Secretary and Treasurer, saying that they were ready to be audited.

The President appointed as an Auditing Committee Drs. Walter B. Dorsett and C. L. Bonifield.

The Secretary spoke of the importance of the Fellows sending him their correct addresses for publication in the Transactions. Early notices of any changes were very essential.

Adjourned.

Wednesday, September 17, 1902.

The Executive Session was called to order by the President at 5:30 P.M.

The Secretary submitted the names of two prominent South American physicians for Corresponding Fellows, and, on motion of Dr. Davis, action on their election was deferred under the rules until next year.

The Secretary read a communication from Messrs. Louis S. Matthews & Co., of St. Louis, Mo., in regard to a group photograph of the Fellows of the Association which they would like to produce. He stated that action on this matter was taken at the Indianapolis meeting, the proposition being for Fellows to furnish photographs of themselves to the firm, they grouping them and making a symmetrical picture.

On motion of Dr. McMurtry the Secretary was directed to request those Fellows who had not sent their photographs to these gentlemen to do so immediately.

The Secretary stated that the next proposition for consideration was with reference to the union or amalgamation of the Southern Surgical and Gynecological Association with the American Association of Obstetricians and Gynecologists. He said

that a committee was appointed last year to consider this matter, and that it was now in order to receive the report of that committee.

Dr. Carstens moved that the matter be laid on the table and the committee discharged. Carried.

The Secretary stated that the next proposition for consideration was an amendment to the constitution offered by Dr. Carstens last year, which reads: "*Resolved,* That one hundred and twenty-five be stricken out and other figures be put in their place."

On motion of Dr. Davis the amendment of Dr. Carstens was postponed until next year.

The next order was the election of officers for the ensuing year. This was done, with the following results:

President—L. H. Dunning, Indianapolis. *Vice-presidents*—Marcus Rosenwasser, Cleveland, O., and Herman E. Hayd, Buffalo, N. Y. *Secretary*—William Warren Potter (re-elected), Buffalo, N. Y. *Treasurer*—X. O. Werder (re-elected), Pittsburg, Pa.

To fill the three vacancies in the Executive Council, Drs. Vander Veer and McMurtry were re-elected, and Dr. Ricketts was elected to succeed Dr. Dunning.

Place of meeting, Chicago, September 22-24, 1903.

Dr. Ricketts extended an invitation to the Fellows to meet with the Southern Surgical and Gynecological Association the second Tuesday in November, 1902, at Cincinnati.

This invitation was renewed by the President of the Southern Surgical and Gynecological Association, Dr. W. E. B. Davis.

On motion of Dr. Hayd, a rising vote of thanks was extended to the Secretary, Dr. Potter, for his efficient and valuable services rendered to the Association.

Dr. McMurtry moved that a vote of thanks be extended to the retiring President and Vice-presidents for their able and efficient services; also, that a vote of thanks be extended to the proprietor of the Raleigh Hotel for the courtesies extended to the Fellows and for the personal interest he had taken in promoting their comfort. Carried.

On motion of Dr. McMurtry the Secretary was instructed to convey to Dr. Richard Douglas the regrets of the Association that he had felt compelled to return home before presenting his

paper, coupled with sincere wishes for his early restoration to health.

The Secretary expressed his appreciation of the kind vote of thanks tendered to him.

Dr. Ricketts, the retiring President, said he appreciated very much the vote of thanks extended to him, and, in doing so, said that he was under many obligations to the Fellows for their kindness and consideration while trying to guide the deliberations.

The Secretary announced that the Auditing Committee had examined the accounts of both the Secretary and Treasurer and had found them correct, with a balance in the treasury of $24.94.

On motion, the report was adopted.

There being no further business, the Executive Session then adjourned.

WILLIAM WARREN POTTER,
Secretary.

PAPERS

READ AT THE

FIFTEENTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD IN THE

BANQUET HALL OF THE HOTEL RALEIGH,

Washington, D. C.,

SEPTEMBER 16, 17, AND 18, 1902.

BOSTON MEDICAL
MAR 7 1905
LIBRARY.

THE PRESIDENT'S ADDRESS.

OF OUR SHORTCOMINGS.

"Let us reason together."

By EDWIN RICKETTS, M.D.,
CINCINNATI.

In casting a line for this paper, looking over our fourteen presidential addresses, I am profoundly impressed by the fact that they have thoroughly covered the scientific ground pertaining to our society.

It was with some timidity that I chose the above title. In doing this I was not unmindful of the fact that I was to criticise our profession in a general way in order to best consider our special shortcomings. In any or all of your discussions you have been so fair in legitimate criticism, and with it so full of forbearance, that I am encouraged to speak plainly. I fully appreciate and am thankful for the distinction you have conferred on me in being honored with the presidency of this society of special workers. With this honor comes my first opportunity and privilege of being requested to say what I think of you, at least collectively, without fear of a reply. My position is not without responsibility, and I will make duty my only monitor. Friendly and honest criticism, offered without prejudice, can do no harm; it may do good.

It is with pride that I call your attention to the five hundred original articles, with the one thousand pages of discussion, that stand as the result of your fourteen years' work toward erecting a monument that is to be in honor of your unselfish efforts of true special work. Our transactions are to be read by the

coming men in medicine, and it is for these that you have sown deep and well the abdominal and gynecological seed. The work of our most worthy secretary always speaks for itself, and does it in no uncertain sound. While it is evident that you have accomplished much, it is also as evident that you should have done better and more work. All of this goes to prove that all has not been accomplished. Such was claimed not long before this society was organized. Your work has surely evidenced the fallacy of such a statement.

For the study of ancient gynecology, showing that all surgical procedures were done yesterday, are done to-day, and lost to-morrow, I refer you to the book recently brought out by Stewart McKay, of Sydney, Australia. In this he clearly shows and kindly points out the uneven chart lines of progress from near the time the rib was removed for the making of the first woman, that Celsus gave us his well-written observations on the anatomy of the uterus, and Galen gave his work on the dissection of the Fallopian tubes. I am yet to be convinced that anesthesia was a lost art to Galen and his followers. Our professional troubles, of so complicated a nature, began with the unfortunate marriage of medicine to the priesthood. This brought incantations and superstitions that honest efforts on lines of true philosophical reasoning have not been able to eradicate. The worst of it is that our profession is still a willing slave to the priesthood, which flatters itself that it is able to make better the chances for our future, knowing that it has rewards of present positions to extend.

Like the church, medicine is denominational. Thorough organization is not ours, and for this we lack independence and the desired highest dignity possible, which would bring greater usefulness and better work for rich and poor alike.

For the association of *our* profession with the priesthood, as coming from the many denominations, its members have had their views on practical Christianity broadened. Notwithstanding our open-handed charity, for this we have been criticised (but pills do act without ceremony, even to increasing the dose). Similar ceremonies without pills or scalpels are being taken up by many of the laity to-day. With some the patient is to recover with ceremony and without pills, while in others the recovery is to be more satisfactory if the doctor will only fail to ask for his

fee; just let it be optional. Such demands were once of a more personal nature, while now they are strengthened by coming from denominational priesthood medical trusts,—and no questions to be asked for the receiving.

The general practitioner of this or any other country is the backbone of medicine. It should not be otherwise. With just and co-equal considerate relations, the best interest of the physician and specialist is not to suffer. With changed relations toward the general practitioner complications are sure to arise.

Our old-time true medical allegiance must be renewed, and in no uncertain manner. For this lack of consideration the general practitioner has been aggrieved, and he has not failed to retaliate on special lines and with a high mortality. Re-establish the better and old-desired relationship, and even a division of fees will not be requested. He sees the patients long before they are to come to us, and many times long after their return. You must have his confidence first; yours, to him, is secondary. He knows, long after your patient has returned to him, of some of your failures, when possibly you are well under the impression that they are successes. You are to be his handmaid in surgery, ready to respond to his call. Show him that he can trust you under any and all circumstances, just as so many of his families have learned to trust him,—you must never forget that he has many delicate problems to overcome in order that you may be called in to any of his cases.

After Ephraim McDowell established the fact that ovariotomy was legitimate and could be performed to save many, many lives, ovariotomy fell into disrepute—not for the failures of McDowell, but for those of incompetent general surgeons; so the general practitioner decided that, for the reason of such high mortality in the hands of all operators, it should be abandoned, and it was.

It was to be taken up again after more than a third of a century—beginning with 1809—had passed; and in the meantime thousands of women with ovarian tumors alone, not operated upon, died. Progress for the relief of these conditions ceased. For the efforts of the second generation of operators—as Dunlap, the Atlees, Sims, and others—for the relief of ovarian tumors and for vesico-vaginal fistula, the mortality was lower

than it had been in the hands of the best general surgeons for the fifty years following 1809. It remained for the Birmingham school (the third generation of special operators) to take up the scalpel in the best interests of surgical diseases of women, and to lower the mortality as never before; and with this, pelvic surgery was given birth, and Lawson Tait re-established an old operation for the repair of the complete and incomplete lacerated perineum.

There is every reason to believe that abdominal surgery and gynecology, in the hands of all operators, is being accompanied with a higher mortality than is true of that done by the special workers. The work in all hands is not so thorough on conservative lines. For the "all told high mortality" the doing of abdominal surgery and gynecology undoubtedly is on the down grade; and it remains to be seen whether the brakes are to be reached, and if the general surgeon and general practitioner are the best to manipulate them. Some that have filled the demands of special workers in abdominal surgery and gynecology for a time, seem ready to join hands with the general surgeon, feeling that this and similar societies should cease to exist (notwithstanding the fact that these special efforts have made abdominal surgery and gynecology famous), and that they should become general surgeons and obstetricians—in fact, return to the doing of an amputation for gangrene to-day, a tonsillectomy to-night, with a case of erysipelas or some other infectious or contagious disease continually on hand. Under such circumstances the strictest attention to, and observation of, surgical asepsis or surgical antisepsis is to give a mortality that is to put us back fifty years. That is, the general practitioner will so judge us, and in truth.

He rendered judgment that settled the high mortality for the fifty years referred to, and it looks very much as though he will have the opportunity of doing as much again. The lowest mortality that we have ever had to record in our special work was not the result of the efforts of general surgery, for it long and loud denied, with none less than Sir Spencer Wells, that Tait had found a pus tube and pelvic surgery. The first lowest mortality came to us as the result of the arduous labors of a most trying and sacrificing personal kind, through the efforts of Tait, Bantock, Thornton, Keith, Savage, Sinclair, and others coming

from England—the country (and let it be said to her great honor) that has recognized longest and with the greatest respect the true specialist.

It has been most unfortunate for the very best desired results in abdominal surgery and gynecology, and for the best financial interests of the profession at large, that those few general surgeons with wide reputations in general surgery should do abdominal surgery and gynecology as a secondary matter. Such frequently comes as the result of large and unwieldy clinics that are responsible for aiding in seductive and delusive six-weeks-touch courses called polyclinics.

It is refreshing to see and read so frank an expression as that coming from James Hawley Burtenshaw, Adjunct Professor of Gynecology in the New York Polyclinic, *New York Medical Journal,* August 30, 1902, on "Gynecology and Country Doctors." He says "that the teaching is often over the head of the average postgraduate student, and he nearly always takes it too much for granted that his listeners have been well grounded in the principles of a particular branch, and that he therefore fails to enter sufficiently into the details of his subject. This is particularly likely to be true when a large number of patients are present at the clinic, necessitating rapid and more or less cursory attention to each in order that the routine work may be completed in a specified time." He adds: "A six-weeks or three-months course at a postgraduate medical school will not serve to make of the most earnest workers a competent specialist in any branch of medical work." This is a frank and manly acknowledgment. I have purposely talked with men, East and West, who are connected with some of our best polyclinics, and they frankly admitted—in confidence—that the polyclinics are greatly at fault.

This final rapid polyclinic equipment, which is the result of the hurried and incomplete teaching, is not to bring the demanded low mortality for the work done after returning to the respective fields of general practice, general surgery, or both. For any one seeking the special field, ten years of active general practice, studying symptoms vigorously, to then spend a year working with leaders in the special surgical art, will undoubtedly accomplish more. There are no short roads to the successful general practitioner any more than there are to our special line.

There are reasons why the physician and all those engaged in the practice of the specialties should enter the political arena. He owes this to his country and to the city, town, village, or district in which he may reside. It will teach him what organization is, what and how a power can best be wielded for good. It will result in pronounced efforts for the organization of the medical profession, which in due time is to command the highest respectful consideration, as coming from the national, state, and county governments. Such is to make us a free and independent profession, and to bring with it respect, as coming from church as well as state. Not well-applied commercialism is with us. I say that the medical and surgical laborer is *always* worthy of his hire; but there is a right and a wrong way of obtaining an equitable financial remuneration. Commercial agencies can be made to serve you as they do business men.

Is the number of specialists to be decreased? I would say, "Yes, for a number of years, and surely with a higher mortality." On those remaining true to the special work and their followers will be imposed the task of working on new lines—surgery of the pancreas; the earlier diagnosis of hydro- and pyosalpinx, with abdominal, vaginal, or combined drainage for restoration of function; earlier diagnosis and treatment of limited pathological lesions of one or both ovaries; stenosis, with or without fimbriated occlusion of the Fallopian tubes and their relief; the study and diagnosis of diseases of the spleen that are to be amenable to relief as coming from surgical intervention; the prophylaxis of many of the surgical diseases peculiar to women—this to be taught to the sex in the most approved way, though delicate it be; the remarriage of obstetrics to abdominal surgery and gynecology. Then we are to be in line with Germany, France, and England.

While the laity is to be the last to appreciate the importance of the lowest mortality possible, they will come along in due time, and their decision will again create desired special demands, that will be gladly catered to by a less capricious and wiser profession. With this our specialty is to be again popularized, until the general surgeon is to consider the invading of our new field, which we have made possible for the redemption of our specialty. For the reason of our pioneering, if the general surgeon cannot do the work better, in justice he should

stand aside. If he can do it better we are ready to yield to him the special surgical palm. With medicine thoroughly organized, each specialty, along with the higher grade of merit demanded for the recognition of the surgical worker, knocking at the door, that competitive commercial spirit which now exists as one specialty against another would *not* receive the undesired recognition of to-day. All other professions and trades have said of us—and not without truth—that we have no thorough organization. Granting the truth of the assertion, the fault lies within ourselves; for the correction, we cannot expect, or ask, that others begin the work for the solution of this very important problem.

Now that women are on a co-equal footing in medicine for the same prescribed laws, state and medical, as men, it should be our duty and our pleasure to assist in the correcting of certain abuses. For instance, the obstetrical practice, as coming from the poorer classes, should be liberated from the too often dirty midwife and placed in the hands of the woman physician, and financially, if necessary, at the figures of the midwife. Ten per cent added on the lines of infection comes from the deliveries at the hands of the midwife.

The true working relationship of the neurologist, as bearing on our special work, must be better and far more appreciated. He should be called into consultation oftener, and he in turn should consult with the gynecic and abdominal surgeon before sending any of his patients to an institution for partial or permanent detention.

It is claimed by some that all men cease to be aggressive in the trades and professions at 50 years of age. If this be true there is much food for thought as to the best interests of many of us in this society. If this be true, then we must console ourselves with the fact that others passed from the arena as we came in. It is with such a possible transitional state in view that we have in reserve young men who, we are sure, will plant our standard farther toward the desired pole. In doing this, they are to prove, by their good work, all has not been accomplished.

What would come from that which we have considered? A National Secretary of Medicine. It would be medicine, not priesthood and medicine. It would be medicine on its highest and broadest plane; and for this the members of the specialties

would duly consider and honor each other. It would mean dignity, higher regard, influence, *and an equitable financial remuneration.* It would be for the medical profession to assist in making the world better. It would be for the higher education of our boys and girls who may determine to enter the ranks of medicine. It would be that our profession would know better how to ask and how best to obtain that which it has so long needed and justly deserved.

PELVIC DISEASE IN THE YOUNG AND UNMARRIED.

By C. L. BONIFIELD, M.D.,
CINCINNATI.

THE vast majority of patients who come under the care of the gynecologist are suffering from disease due to infection either of a gonorrheal or septic character, to the injuries incident to childbirth or abortion, or to those diseases which are prone to occur about the time of the menopause. This paper will deal only with those pelvic diseases or symptoms which occur in those who have never been subjected to the disturbances of sexual intercourse or the perils of parturition. Many of these disorders are purely functional; others are only symptomatic of some constitutional trouble and their treatment can safely be left to the family physician.

An increasing number of unmarried women consult gynecologists or the family physician for gynecological troubles. Whether our young women of the present day are more prone to pelvic disease than their mothers and grandmothers were at their time of life, or whether the large number of men cultivating the gynecological field serve to attract attention to this part of the anatomy, is a question. The modern girl would seem to take more exercise than her ancestors did and we would expect her to be stronger; but the added duties and cares of a more advanced civilization make her more nervous, and it is probable that the same disorder is felt more and heeded more than it was by her mother, as the stroke of a whip is felt more by a racehorse than by his fellow who works in a dray.

In one class of modern girls the strain on the nervous system is the struggle to compete with the stronger sex in acquiring higher education, in practising the professions, or in filling positions in commercial houses. In another it is the struggle for social prominence. The ordeal that a society girl goes through with

during the season is extremely trying to the most robust, and her weaker sisters are sure to break down under it. Dress reform makes slow progress; but certainly dress is now no more senseless and harmful than it was a century ago. Dancing is far from healthful exercise, indulged in, as it is, in overcrowded, superheated rooms, with tight clothing interfering with respiration; but dancing is no more injurious now than formerly. Cycling is a modern form of amusement which, fortunately, is rapidly losing popularity; it is as trying on women as the sewing machine, excepting that it is used for amusement instead of work and is used in the open air. Horseback-riding is to be commended. And golf cannot be blamed; it demands exercise, not too violent, in the open air, and the player wears rather sensible clothing. So the explanation suggested seems most plausible.

It is to call the attention of the profession to the well-known but apparently often forgotten truth that pelvic symptoms do not always mean serious organic disease of the pelvic organs, in fact that they usually do not indicate trouble of this character in the young and unmarried, and that such patients should not be subjected to local examination and treatment until reasonable effort has been made to relieve them by other methods, that this paper is written.

The journals have been saying, in the last few years, that the work of the gynecologist is done; that he has taught the surgeon how to do the operative part of his work, the obstetrician how to recognize what should be done, and that in the future these two worthies working together will occupy the whole field and the gynecologist will be seen no more in the land. At the recent meeting of the American Gynecological Society Dr. Jenks quoted some one who had taken pains to compare the mortality of gynecological work done by gynecologists with that of such work done by general surgeons, and he found it to the advantage of the gynecologist. This is as it should be. The law of "survival of the fittest" is still in operation. If the gynecologist would live he must be worthy of life. The gynecologist who graduates from the college a specialist will perish. The gynecologist who becomes such after a six-weeks course at a postgraduate school will fail. But the gynecologist who is first a good general practitioner, and then learns the specialty by long apprenticeship to one of its masters, will always find a field for his efforts. It is

in diagnostic ability that the gynecologist must excel if he would maintain his present prominent position in the profession, and one of the best evidences of such ability is the readiness with which he recognizes what cases do and what cases do not come within his domain.

Among the affections that most commonly bring this class of patients to the gynecologist may be mentioned the disorders of menstruation, undeveloped uterus, tubercular disease of the appendages, and acute displacements.

Menstruation may be tardy in making its first appearance. Unless there are marked local symptoms or the function is several years behind time, there is no necessity for pelvic examination. But the wise physician will not dismiss the case as unworthy his attention. He will first endeavor to find out whether the function is really late or only apparently so. He will judge of the time it should make its appearance by the complexion of the girl, the latitude in which she lives, her habits of life, the menstrual history of her mother and older sisters, and the like. If it is really late he will do his best to discover the cause and remove it. Such cases are nearly always anemic. But he will not be satisfied with having discovered that anemia exists and having prescribed iron for it. He will investigate carefully the condition of the heart, the lungs, and the kidneys. He will ascertain if digestion is normal and if the diet is wholesome and nutritious. It is important that a girl's health be as nearly perfect as possible at the time of puberty, otherwise the proper development of uterus and ovaries may not occur. The uterus that begins to menstruate late ceases to do so early, showing a lack of vitality.

Amenorrhea is one of the early symptoms of phthisis. When there is a gradual cessation of menstruation, unless the patient is gaining weight rapidly, this or some other grave constitutional state is to be suspected and diligently searched for. Obesity frequently lessens and sometimes stops menstruation. The treatment is dietetic and a strenuous life. Ovarian extract is sometimes of value.

It is the universal observation of the profession that the sudden cessation of menstruation in the apparently healthy is always suggestive of pregnancy, no difference what the character or social position of the individual may be. Menorrhagia, though not so common in this class of patients as in later life, is fre-

quently present. A depraved state of the blood whereby it loses its coagulability is often its cause. Interference with circulation by disease of the heart, kidneys, or liver may also produce it. These causes should always be searched for, and corrected if found, before local measures are resorted to. Rest in bed during the period should always be enjoined. The administration of ergot or hydrastis, or a combination of the two, with a sedative for a few days before and during flow, is useful. Curetage is rarely required.

Dysmenorrhea may be of uterine, tubal, or constitutional origin. In the young and unmarried it is most apt to be of the constitutional variety. Menstruation is preceded by a congestion of the pelvic organs. This physiological process, which so closely resembles a pathological one, readily crosses the border ground and becomes pathological and painful. Anemia, chlorosis, malaria, syphilis, and rheumatism, are a few of the more common causes of constitutional conditions that make menstruation painful. The true nature of the trouble having been recognized, the treatment suggests itself, and it had best be left to the internist, to whom it legitimately belongs. If specialists were more careful to refer cases back to the family physician, they would not so often be humiliated by being asked to divide the fees.

The next most common variety is the uterine. Flexion, version, and narrow cervical canal play an important, but still subordinate, rôle in the production of dysmenorrhea. Menstruation is usually not painful from such a uterus until an endometritis develops. The endometritis is the cause of the pain; the flexion, or whatever obstruction to drainage and circulation exists, is a predisposing cause of the endometritis. Cure of the endometritis relieves the dysmenorrhea. That simple endometritis can often be cured without any local treatment has long been demonstrated. Tonics, when indicated, a nutritious and easily digested diet, fresh air, and salt baths for the anemic; a non-stimulating diet with plenty of exercise and an occasional saline purge for the plethoric, will work wonders. The society the patient keeps and the book she reads are also to be investigated. It is useless to try to relieve congestion of the pelvic organs of a girl, who is spending one or more evenings every week with a lover whose endearments produce a hyperemia, which her virtue prevents being relieved in a physiological way. Immoral books, suggestive plays,

intimate association with other girls who habitually talk of things sexual and sensual, are harmful only in a less degree.

By proper treatment, hygienic and medicinal, a majority of these cases can be cured without resort to local measures. When examination is necessary it is usually best to administer an anesthetic; the examination will be more satisfactory to the physician and less disagreeable to the patient. Preparations should be made so that if a dilatation and curetage are indicated they can be done at once, avoiding a second anesthesia. Operative treatment is the only local treatment to be thought of. It is inexcusable to have such a patient coming to one's office for applications to vagina or uterus. Tubercular disease of the tubes may be the cause of dysmenorrhea. Other tubal disease practically does not occur in the class of patients under discussion.

Ovarian dysmenorrhea is not rare in such patients, though many cases are diagnosed as ovarian which are really constitutional; the pain being neuralgic in character, though referred to the ovaries, which are found upon bimanual examination to be hypersensitive but otherwise normal. Imperfectly developed ovaries, prolapsed ovaries, and ovaries having undergone cystic degeneration produce true ovarian dysmenorrhea. The prolapsed ovary may be restored to its normal position, if it be healthy, which it rarely is, and the symptoms produced by its displacement relieved; but the other two forms of disease are not amenable to treatment, and it will usually sooner or later be necessary to sacrifice the organs. I have cured ovarian dysmenorrhea by freeing the right ovary from adhesions to the appendix.

The development of the uterus may be arrested at any stage of the process, leaving the organ in a rudimentary, infantile, or pubescent state. The symptoms of undeveloped uterus are principally those connected with the menstrual function. In the rudimentary uterus menstruation is absent, but if the ovaries are not also rudimentary there will be painful efforts to establish the function. Menstruation from the infantile uterus is tardy in making its appearance, is scant and usually painful. The pubescent uterus begins to menstruate at about the usual time of puberty; menstruation is scant, but usually painless for several years or until an endometritis develops. If the effort to establish menstruation with a rudimentary uterus is sufficiently severe to justify it, the ovaries, which will often be found in a state of

cystic degeneration, may be removed to stop them. With the infantile uterus efforts may be made to develop it, though they will usually meet with a small measure of success. Tonics, exercise, massage, electricity, dilatation, and curetage may all be tried. By these means the symptoms may be relieved, but it is seldom a cure will be effected; relapses are frequent, and it may be necessary to remove the ovaries to stop the menstruation. Fortunately the rudimentary and the infantile uterus are rare. The pubescent uterus is quite common. It is generally sharply anteflexed, but occasionally retroflexed, the cervix long and narrow and the body dilated. Dysmenorrhea is a prominent symptom. Treatment of the pubescent uterus is more satisfactory than of the infantile or rudimentary. Tonics, exercise, thorough dilatation and curetage, and tight packing with iodoform gauze, repeated one or more times if necessary, will develop many pubescent uteri into practically normal organs. This subject is more fully treated in a paper by the author published in the May number of the *American Journal of Obstetrics* for the year 1902.

Tuberculosis of the uterine appendages occurs as a part of a general tubercular peritonitis, or they may be the only organs in the peritoneal cavity attacked. Primary tuberculosis of the appendages usually begins near the fimbriated extremity of the tube. When the appendages are the only organs involved the symptoms are those of a subacute salpingitis. The diagnosis is made by recognizing the enlarged tubes and excluding gonorrheal and streptococcic infection. The treatment is extirpation. Tubercular peritonitis is frequently mistaken for typhoid fever and occasionally for appendicitis. Painful urination and painful defecation, rigidity of abdominal walls not limited to one area, and indistinct tumor-like masses in the abdomen, in which areas of resonance are strangely mixed with areas of dulness, are some of the symptoms that will enable one to recognize tubercular peritonitis. When the general condition of the patient will permit, an abdominal section should always be made. The surgeon's judgment must be used as to what will be done after the abdomen is open. Simple section is many times followed by marvellously good results; but, as the starting point of the disease is frequently the uterine appendages, their removal is indicated when it can be accomplished without too much violence to contiguous structures.

Acute prolapse of the uterus may occur in young unmarried women as the result of a fall or heavy lifting. In a case that came under my observation it occurred as a heavy basket of marketing, which had been carried several squares, was being deposited on the floor. Like hernia, it occurs in individuals of lax fiber. Ventrofixation is probably the best treatment.

In conclusion I will repeat the statement that many young and unmarried women suffering with pelvic symptoms require neither local examination nor treatment; when an examination is necessary anesthesia is advisable, and treatment, when possible, should be operative.

DISCUSSION.

DR. L. S. MCMURTRY, of Louisville.—Every Fellow present, I am sure, will endorse the teaching of this paper. While the practice of examining and treating girls and young unmarried women suffering from dysmenorrhea and similar conditions has been condemned for years in this association, that evil has not been altogether abated. The views presented by the essayist should be endorsed in order to further emphasize the protests made from time to time. It is yet a common error on the part of many practitioners, to yield to the pressure of anxious mothers and treat the uterus for menstrual disorders and vague neuroses that have no pathological connection with that organ. Such treatment too often affords means of infection and extensive inflammatory lesions. It should be the special care of the physician to advise against such interference and, when an examination is indicated, to anesthetize the patient for that purpose. Dilatation of the cervix, curetage, and repeated application of the tampon are the operations most commonly abused. The essayist does not advise against examination and treatment of girls and unmarried women when subjects of disease of the pelvic organs, but does advise discrimination between cases of distinct and supposed disease.

DR. W. E. B. DAVIS, of Birmingham.—I wish to say that while the literature of the profession is full of citations of the fact that the southern portion of our country is the home of gynecology, it has likewise been the home of tinkering and of major operations for minor disease of the pelvis. Probably the teachings of Battey did more harm than good. You will all remember that he performed normal ovariotomy on many young girls because their constitutional condition was such that they suffered from dysmenorrhea. Until his death, which occurred seven

or eight years ago, he did not approve of the teachings of Lawson Tait. While Battey did excellent work, he taught to the last that normal ovariotomy should be resorted to in cases in which women were not relieved of dysmenorrhea by the usual treatment, but continued to be invalids after long treatment, both local and general.

I appreciate the credit that has been given the South for what it has done in gynecology, and I believe that Battey deserves a great deal of honor for the work he did. But it was very unfortunate that he had a wrong conception of the operation, and his teachings caused more harm, probably, than those of any other man in this country or in Europe.

Dr. Herman E. Hayd, of Buffalo.—Dr. Bonifield's paper interested me very much, and I was about to say that it was not only orthodox, but axiomatic; at the same time, I am inclined to believe that he endeavored to make the Fellows feel that he was more optimistic in his outlook in regard to the treatment of pelvic diseases in women than he really is. I would not for a moment wish you to believe that I think we should be careless in instituting examinations in young and unmarried women, nor should we suggest any unbridled license in this direction. However, I think we err on the other side of the question too frequently, and attribute their troubles to hysteria and other reflex disturbances, when in reality at the bottom of them is organic disease.

One phase of this subject I took up in a paper last year—namely, retrodisplacements of the uterus in unmarried women, and also in young married women who had not borne children, or who had not had miscarriages and abortions—and I am satisfied that a great many young women owe their amenorrheas, dysmenorrheas, their hysterical and neurasthenic symptoms, to an undetected retroversion of the uterus. Those who have been doing the Alexander operation as frequently as some of us have done it and have the greatest confidence in it, realize how frequently retrodisplacements of the uterus occur in young women and young girls, and without any question are a cause of their physical sufferings. Moreover, although we do not see as many of these conditions in the unmarried, we, at all events, see them in the young married, who complain of various symptoms, in whom an abortion, a miscarriage, or gonorrhea could not have existed, yet we find in them an inflamed, retrodeviated uterus. No doubt the organ was in that position before marriage, and was simply irritated by marital relations.

The keynote or drift of the paper is that after having made up our minds that disease really exists in the young woman, nothing short of an operation should be instituted. There is no question that these women, as Dr. McMurtry has said, are tinkered with, tamponed, and their uteri painted with iodine

until they are not only injured morally but physically, by having had set up in them considerable tubal and ovarian mischief. Unfortunately, many young girls consult women practitioners, who keep on treating them indefinitely, and as a result we see just the physical wrecks who so frequently come to us for surgical care.

DR. W. A. B. SELLMAN, of Baltimore.—There is one cause of pelvic disease which has not been mentioned by any of the preceding speakers. The probability is that it has been overlooked because these gentlemen are located in inland towns. In Baltimore, where I reside, very many young women go to Atlantic City, Cape May, and the various ocean cities and seaside resorts; many of them are girls who work in shops, at typewriting, etc., who have but two weeks' vacation. Many of them indulge in ocean bathing the day before they expect to menstruate, and some of them do not hesitate to go into the surf when they are slightly sick. Located as I am, near the coast, and where so many people go to these places for rest and recreation, I see a great deal of pelvic disease which develops from indulging in ocean baths at a time when there is congestion present in the pelvic tissues, due to approaching menstruation. Some of these girls return to their homes having missed a menstrual period, and symptoms of general pelvic disease are developed in this way, and, as Dr. Bonifield says, it may often bring about disease of the ovaries eventually through progressively increasing congestion.

I wish Dr. Bonifield had dwelt upon this phase of the subject, but the probability is that he has not met those cases, residing, as he does, in Cincinnati. But I direct your attention to that point because near the coast we find a great many cases of pelvic disease due to the causes described.

In regard to the treatment of these patients, the essayist is perfectly right, when he has a cystic ovary or an enlarged ovary with general disease of the appendages to deal with, in saying that operation is the only thing which will cure the patient, and to resort to tinkering by glycerine tampons or by swabbing out the uterus with iodine is a loss of time, subjecting the patient to an ordeal which is entirely unnecessary. I find, however, in very many cases of congestion of the uterus what I call an acute metritis; there is a certain amount of congestion in the endometrium also; there is dilatation of the bloodvessels and overdistention of the gland ducts, and on account of swelling of the tissues the gland ducts are more or less closed, and very often by sweeping a small curet over the walls of the uterus, opening up the gland ducts and perhaps cureting a little of the congested tissue away, thus allowing a slight hemorrhage to take place, these patients are often relieved by one or two such treatments. I do not deprecate operation where the appendages

are involved, but I refer to those simple cases due to suppressed menstruation.

Dr. James F. W. Ross, of Toronto.—Next year, it being the fifteenth year of our work, I intend to give a little retrospect of the remarks made by different Fellows of this association in the past, because one of the great difficulties with which we have to contend is that we sometimes make statements without due consideration. These statements go forth, are reproduced in textbooks, and women physicians about whom we have heard this morning, as well as others, read these works and oftentimes go into practice with these ideas foremost in their minds. If we desire to improve matters we must begin with the textbook and also increase our pathological knowledge.

In speaking of displacements of the uterus, I must disagree with the essayist, particularly with regard to the necessity for operating on displacements of the uterus in young girls. I believe too much operating is being done for the relief of such conditions. We are not by any means certain that these displacements produce the symptoms with which they are credited. This is a branch of our work that will have to be investigated still further. There is no doubt there has been a great abuse of the use of the curet in young girls, and I believe there has been a great abuse of such operations as ventrosuspension, ventrofixation, and shortening of the round ligaments in the same individuals. In fact, when such cases come to me at home for consultation I feel a great responsibility in advising them; I prefer to treat gross pathological lesions, and I would rather let some other practitioner, who is not a surgeon but a physician, take the neurasthenics and deal with them. They come back to one, many of them no better. Many who scarcely knew that they had a "womb" before a ventrosuspension or fixation are, unfortunately, too well aware of the fact after such an operation.

Teaching students of medicine to examine young girls without an anesthetic is all wrong. There is no student who can feel the ovaries accurately without an anesthetic. I did not feel them accurately for at least two years after graduating. We did not have the opportunities of making examinations at that time to the extent that they are afforded to the student of to-day. With a large class of students, taking ten at a time, we find that during their college career they may have an opportunity of examining two or three women. To expect such men to map out the internal genital organs of a woman to such an extent as to say that there is or there is not disease, is absurd. All examinations of young unmarried women, unless they are examined by the finger of a man who is thoroughly expert, should be carried out after the administration of an anesthetic; and the same holds good in patients who are very stout. Not only

that, but I would go further; I find that in order to make thorough examinations of ovaries and tubes I am forced to examine through the rectum, not through the thick tissues of the vagina, but with the limbs drawn up, the bladder and rectum empty, and the uterus drawn down by vulsellum forceps, if necessary. Then the ovaries and tubes can be mapped out and felt, so that one can say there is or there is not disease present; and if an operation is done afterward, one can be reasonably sure of what he is going to find.

I had an instance of the kind a few days ago in consultation, where I had opposed operation on a woman after examining her carefully under an anesthetic. I was satisfied that her symptoms were not due to any disease of the ovaries, tubes, or uterus. These could be felt and were quite movable. However, one ovary was taken out by the surgeon. Why, I do not know. It was carefully examined, and the report was that it was perfectly healthy. There was no necessity for removing it. The woman hates her husband; their marital relations are unpleasant, and as a consequence she is suffering from nervous prostration, not in any way connected with the condition of her pelvic organs or improved by any of the so-called "treatment" she has undergone.

I agree with everything else that Dr. Bonifield has said. It is high time that this matter should be taken up and our young girls protected. There has been a wave in my neighborhood for what is called conservative gynecology. It is unfortunate that such an expression ever was coined. Some practitioners are now removing one ovary and one-quarter of an ovary, or one ovary and one-half of another, leaving just enough to keep up menstruation and to assist the woman in becoming pregnant after marriage. Such surgery is worthy of the strongest condemnation.

Dr. Walter B. Chase, of Brooklyn.—This paper is a timely and interesting one. There is one practical point regarding one of the minor details to which I wish to allude, which has been a troublesome experience with me and, I presume, with others. Allusion has been made to dilatation and curetage in cases of acute flexion. I do not know what the general experience has been, but I find there is a persistent tendency to recurrence of the flexion. If one resorts to dilatation and curetage, in six months or a year thereafter he frequently finds on examination that there is practically the same state of affairs which existed before these measures were carried out. What can be done to correct the recurrence of the flexion? I believe stem pessaries have one place in surgery. If you dilate the uterus in such a case, then introduce a small glass stem pessary, a quarter to three-eighths of an inch in diameter, passing it beyond the point at which flexion existed, having in it a central channel

for the easy escape of the secretions, then tie the tube in place with silkworm gut passed through an orifice in the lower portion of the tube, allowing it to remain from one to two or three weeks, it will meet the essential conditions sought. As the tissues of the uterus contract, a straighter canal and a more patulous os will result.

DR. WILLIS G. MACDONALD, of Albany.—I would like to say a word or two in relation to this subject, and perhaps to repeat some remarks which I made in the discussion of a year ago on a paper that was read by Dr. Hayd. The impression was at that time that the discussion was somewhat personal, although it was not intended to be so.

I fully endorse all that Dr. Bonifield has said in his paper. He has given us a most excellent one, and I am very glad to hear the discussion that has already taken place; yet it occurs to me that it is a difficult question to decide always just where tinkering stops. Whether the female physician or the general practitioner is guilty of all tinkering, or not, is a very difficult question for me to decide. At least, I find it to be so in my section of the country. Very frequently neurasthenic women present themselves in my service without any of the internal organs of generation, yet having the same line of symptoms which they had in the beginning. The history of these cases is not frequently known. Not only one surgeon, but perhaps two or three, commence with dilatation and curetage; the next one does an Alexander operation; a third one removes a portion of one ovary and does ignipuncture of the ovary and separates adhesions, while still another does a complete extirpation of everything, both ovaries and tubes, and by that time the woman is left with a hernia and has all of the symptoms—pain in the back, headache, stomach difficulty—that she previously had It is really a sad picture when these patients present themselves to us, after having undergone all of this surgical and gynecological experience, and I can readily see how difficult it is for us to avoid meeting with a certain proportion of such cases. The patient is sent to the surgeon impressed with the idea that the removal of the ovaries is going to cure her of all ills from which she suffers, and such patients present themselves to every operating surgeon every day. They are sent to him by physicians with letters to the effect that this patient needs such and such a thing done. It requires a great deal of backbone and argument to convince such patients to the contrary. They, therefore. drift to some other surgeon who is ever ready to operate.

After an operation has been done there is no relief of the symptoms, but the patient suffers as much as she did before. It requires a great deal of experience and discernment to manage this particular class of cases. For my own comfort, I like to see cases of real disease come in, with good-sized tumors—

something which is physically palpable—in order to do any surgery upon them, rather than those cases in which operative intervention is more or less experimental and speculative.

DR. BONIFIELD (closing the discussion).—I shall only detain the association for a short time. I read the paper rapidly, and I am not surprised that Dr. Ross misunderstood me. I thoroughly agree with him in regard to the treatment of displacement of the uterus, except in cases of procidentia uteri, the only class of cases in which I recommended ventrofixation. In the majority of cases displacement of the uterus in the unmarried causes no symptoms, unless the ovaries are also at fault, and the symptoms are due more to the ovaries than to the condition of the uterus itself.

DR. ROSS.—Ventrofixation will not cure procidentia. I have tried it.

DR. BONIFIELD (resuming).—I am confident that I have cured such cases, but it is simply a difference of experience in that regard. You will observe that I recommended ventrofixation. and not ventrosuspension. I said in my paper that these cases occurred in women of lax fiber, and if you want to effect a permanent cure of hernia cases, or any other conditions that occur in that class of people, it must be accompanied by an increase in the general tone of the patient.

Dr. Macdonald stated that when a patient got an impression from her physician that so and so should be done, it was very hard for others to eradicate it. That is the experience we all have. One physician will tell a patient that she has serious trouble, and it will probably take two or three physicians to convince her to the contrary. It requires a great deal of strength of character not to operate on many of these patients.

I feel gratified that my paper has been so well received. and that the main point of it was understood—namely, that these cases, if treated at all, usually require operative treatment.

EXTIRPATION OF THE GALL-BLADDER THROUGH THE LUMBAR INCISION.

WITH REPORT OF A CASE.

By W. P. MANTON, M.D.,
DETROIT.

Mrs. G. C., aged 38, examined at the request of Dr. B. P. Brodie, April 18, 1902. She has had five children and two miscarriages, the last of which occurred about a month ago. During her pregnancies she suffered a great deal from abdominal pain and soreness, this being particularly marked while carrying her last two children. The labors were normal and she got up feeling fairly well. The family history is good. As a girl she had never been particularly robust, and the color of the skin has always been rather pale and sallow. She has, however, been able to work, and now, although rather feeble, attends to her household duties. Her present condition, she thinks, has existed for the past two years.

Menstruation began at 12 and was regular until the miscarriages took place. The discharge lasts five or six days and is always profuse, the last menstruation, she states, being as "bad as a miscarriage." At present she suffers a good deal from sacral backache on the left side, and there is pain in both iliacs, especially the right. On the right leg there are varicose veins which give rise to a sensation of blood trickling down. She also suffers from numbness in hands and feet and just below the ribs on both sides. The head has not troubled her of late, but formerly there was a "scalding and itching" sensation of the scalp. There is a profuse, thick, greenish leucorrheal discharge. She sleeps poorly and is nervous and easily worried. The appetite is poor, the bowels constipated, and she has suffered a good deal from attacks of indigestion.

On pelvic examination there were found a slight laceration of the perineum, relaxed vaginal walls, and a small laceration of the cervix uteri. The uterus itself is slightly enlarged. The ovaries and tubes are very sensitive, but not enlarged. On the right side the appendages appear involved in slight adhesions running up toward the appendix. The abdominal walls are well nourished but relaxed, and there is considerable diastasis of the recti muscles. The left kidney moves downward to the second degree. The right kidney is enlarged to about twice its normal size, and its lower end has a knob-like projection which extends to an inch below the umbilicus and points downward and inward. On the outer border of the kidney a rounded projecting edge can be felt. The organ is fairly movable and is very sensitive over all. The percussion note is dull over the kidney mass.

A diagnosis of nephroptosis with probably cystic metamorphosis of the kidney was made. The patient entered Harper Hospital April 28. At this time the urine was cloudy, alkaline, specific gravity 1020, and contained a faint trace of albumin, but no bile or sugar. The sediment consisted of numerous pus cells, squamous epithelia, and triple phosphates.

Operation April 30. The uterus was cureted and the cervical laceration repaired. The patient was then turned on her face, a large, thick roll placed beneath the abdomen, and the nephropexy incision made. When the fatty capsule of the kidney was reached this was found surrounded by a mass of dense adhesions, and it was evident that it was these which had given rise to the feel of an enlarged kidney at the examination. On incising the capsule the kidney appeared to be in good condition and of normal size. It was enucleated and delivered on to the back. The fingers then introduced through the wound below the bed of the kidney came upon a hard, rounded body embedded in adhesions, the general feel of which resembled that of the kidney. On separating the adhesions, however, a pearly-white body, traced with bloodvessels, presented at the wound. A hypodermatic needle was inserted into the growth and a syringeful of turbid fluid withdrawn. The body was then gradually enucleated, the fingers following it upward to the under surface of the liver, to which it was attached. It was then seen that we were dealing with a dilated gall-bladder, in the neck of which and in the dilated cystic duct gallstones were present. Separation of the

adhesions about the sac was continued until the cystic duct was freed, when the stones in this were crowded back into the bladder, the duct clamped with forceps and then tied off with a double catgut ligature. A broad attachment of the fundus of the sac to an anterior linguiform process of the liver was also tied with catgut and separated, and a quantity of gauze was packed around the gall-bladder and the latter cut away. The kidney capsule was then split and peeled off to just below the lateral line, four fixation sutures of silkworm gut introduced, and the kidney returned to its place. Before closing the external wound a strip of gauze was carried down to the stump of the cystic duct and allowed to protrude from the upper angle of the skin incision.

During the operation little or no bleeding occurred from the deeper structures, but an annoying oozing took place from the cut edges of the skin and muscle. The patient made an uninterrupted recovery from the operation and was in good condition when last seen.

Subsequent examination of the removed gall-bladder showed it to consist of a thin-walled fibrous sac containing about four ounces of grayish fluid and nineteen gallstones the size of hazelnuts. The bacteriological examination of the fluid by the Detroit clinical laboratory is reported as follows: "The fluid in the small bottle contains a bacillus having the morphology and staining properties of the colon bacillus almost in pure culture. The fluid in the large bottle shows some leucocytes and a few of the same bacilli, together with a long, large rod which retains the violet stain when stained by Gram's method. This latter may be an accidental infection. No staphylococci or streptococci were found in either examination."

Observations.—This case presents several points of especial interest. It is, as far as I have been able to ascertain, the first instance of removal of the gall-bladder through the lumbar incision; the operation was entirely extraperitoneal; and, unless we assume the gastric disturbances and the scalding and itching of the head to have arisen from the condition, there was an entire absence of symptoms pointing to disease of the biliary tract.

Several cases are on record in which the emptying of the distended gall-bladder and the evacuation of stones has been done through the lumbar incision, but in most instances where

disease of the gall-bladder or ducts has been discovered through the nephropexy incision the operation on these parts has been completed through an anterior abdominal opening, and the kidney alone treated through the lumbar wound. Whether the extraperitoneal position of the gall-bladder in this case was a congenital anomaly or the result of walling off by adhesions cannot be determined; but it is certain that the condition must have existed for a very considerable number of years, and complete occlusion of the cystic duct occurred without giving rise to noticeable symptoms.

Regarding the choice of incision in uncomplicated disorders of the bile passages, it may be said that the anatomical position of the gall-bladder—its neck reaching up into the fossa vesicalis of the liver and its fundus extending to the border of the rectus muscle and abdominal wall—renders the organ of easy approach through the anterior abdominal incision, and I am quite in accord with Mayo Robson that the lumbar incision, under such circumstances, "is useful only in theory, and is surrounded by so many difficulties as to make it quite impracticable." But in the presence of a nephroptosis or a morbid condition of the kidney demanding operative intervention, together with an enlargement of the gall-bladder, either from stones or fluid accumulation, I believe that the lumbar route will be found to offer certain advantages over the anterior approach. With the kidney removed and placed astride the wound, after the method of Edebohls, space enough is obtained to enable the operator to work up under the peritoneum and thus complete the operation successfully.

In closing this paper I desire to pay tribute to the pioneer work of Edebohls, who has opened up a field of operation which had previously lain uncultivated.

DISCUSSION.

Dr. Rufus B. Hall, of Cincinnati.—I did not expect to be called upon to discuss this paper, as I would much prefer to listen to others than to say anything upon it myself.

The paper is interesting, and the outcome of the case was satisfactory, both to the patient and to the doctor. There may be

cases occasionally where it would be desirable to approach the diseased gall-bladder through the lumbar incision, but certainly they are rare. The case reported by Dr. Manton proved to be a desirable one for that method. The fact that, for all practical purposes, it was extraperitoneal, added to the comfort of the operator and to the safety of the patient. This extraperitoneal condition was due to the old inflammatory disease of long standing. I have not had any personal experience in operating on gall-bladders through the lumbar incision. I know of one case that was operated upon in Cincinnati a few years ago, where a large number of gallstones were removed through the lumbar incision. The patient recovered, but a fistulous opening remained for many months, and perhaps it still exists.

In Dr. Manton's case there was a mistake in diagnosis. The operator supposed he was going to operate for an enlarged kidney. We are all familiar with the pioneer work done by Edebohls along this line, and we can but admire his work and the advantage that it is affording the operating surgeon.

Dr. W. E. B. Davis, of Birmingham.—While this paper deals with the removal of the gall-bladder through the lumbar incision, a discussion of the lumbar incision for conditions other than cystectomy I should think would be in order. I believe most surgeons would be very slow in accepting this incision for the operation mentioned by the essayist; but there is good reason for using this incision in the treatment of other conditions of the gall-bladder and ducts. My experience, however. both experimentally and clinically, has been that drainage was satisfactory through the anterior opening, using a glass tube and gauze around it so as to insure drainage for the first twelve or twenty-four hours, at which time the adhesions will be sufficient so that it is unnecessary to depend on the gauze any longer. The tube should be removed then and the gauze gradually withdrawn during the next two or three days.

If we treat the duct, as I believe it should be treated in the majority of cases, by simply incising and draining it, perhaps the lumbar incision has advantages—I mean, to make an incision after you have opened anteriorly. If hepatotomy for the relief of biliary obstruction, in cases where we are unable to find the gall-bladder or the duct, should prove to be a satisfactory surgical procedure—and I think it will—certainly the lumbar incision would be advantageous in draining the liver in some of these cases. My own experience, however, has been confined to the anterior incision, and I have found that drainage through it can be established in a satisfactory manner.

Dr. James F. W. Ross, of Toronto.—I do not suppose that this paper and the report of this case open up the question of cholecystostomy and cholecystectomy.

In reference to drainage, there have been two improvements

in this branch of surgery—one made by my friend, Dr. Davis, who has taught us drainage from the front, and another by Morison, who has shown us that we can drain behind the liver. Of late I have been using drainage from the front and through the lumbar incision. I have two patients, now on the road to recovery, from whom I removed stones from the common duct. I was a little afraid of the suturing on account of the friability of the duct. I passed my finger down to the lowest parts of Morison's pouch, slipped a scissors in from the loin, and, having made an opening, put drainage through and through, so that there could not be such a thing as an overflow of bile over the colon into the general peritoneal cavity. Unless this is done, there is danger from the fact that something may happen; the drainage tube may not be attended to by the nurse or the house surgeon, and if a little bile leaks over, one is liable to lose his patient. These cases can be operated upon without stitching the duct. One of my patients is over sixty years of age and she is making a rapid recovery. This method of drainage has sufficient merit to justify recommending it to the profession.

Dr. L. H. Dunning, of Indianapolis.—I wish to call attention to the danger in attempting to drain the gall-bladder through a posterior incision above or to the side of the kidney, as must be done in cases such as the essayist described. The result was excellent in his case, and it is encouraging to know that we may accomplish some good purpose by the posterior incision. Should a like instance arise, I would not hesitate to resort to the same method again; but it seems to me if we attempt to drain the gall-bladder at the side of the kidney or above it, for any purpose whatever, we are jeopardizing the perinephritic fat, which may become infected and then danger will arise. Perhaps suppuration might take place if there should happen to be infection of the bile. I would be loath to drain in that way, and I would agree with Drs. Davis and Ross regarding drainage by Morison's pouch and by the lumbar method. I would like to know how Dr. Manton's experience impressed him upon that point—namely, if he would have felt safe in draining the distended gall-bladder if he had left it behind.

Dr. Joseph Price, of Philadelphia.—All of these operations have been simplified by modern methods. Where the conditions are bad and the delivery of the stones difficult, the recommendation of Drs. Davis and Ross is good. I recall one such case which was disastrous. I believe that if posterior drainage had been practised in that case the result would have been more satisfactory. Only a few days ago I had difficulty in freeing large stones which were buried in the ducts; I had to use a knife. And it is just the class of cases referred to by Drs. Davis and Ross where the question of drainage is always important. But now one can, if he uses the methods of Robson,

deliver the liver and ducts and work as he would in the right iliac fossa.

DR. MILES F. PORTER, of Fort Wayne.—One of the chief advantages in draining in the lumbar region arises from the fact that it will enable us to close the abdominal incision oftentimes and avoid a hernia that would otherwise most certainly follow, and drainage in this region, when it is applicable, for that reason alone is decidedly advantageous.

DR. MANTON (closing the discussion).—Dr. Hall suggests that an error was made in diagnosis. This is quite true, and I doubt if a correct diagnosis could have been made in the presence of the conditions found. We had a large movable mass, which was evidently the kidney, and the enlarged gall-bladder moved with the kidney and the entire mass.

I did not advocate in my paper that all operations on the gall-bladder be done through a lumbar incision. I believe, however, that when the gall-bladder is enlarged, and there is an accumulation of fluid or of stones and fluid, we can work up under the peritoneum and more successfully open the sac, as several French surgeons have done, and drain through the lumbar incision, than through the anterior incision. Certainly, if the case was uncomplicated, I would not choose the lumbar incision for the operation, because, as a rule, through that incision the kidney and bowel may be in the way, making the working space very limited. If, however, we have a displaced kidney which we can take outside the body, the working space is increased, and we can get at the gall-bladder easily. I have palpated a number of gall-bladders and ducts through the lumbar incision, but have never met with a stone in the ducts. Where drainage is desirable it is certainly much more effective and satisfactory through the lumbar than through the anterior incision.

SUPRAPUBIC VERSUS INFRAPUBIC PROCEDURES IN THE TREATMENT OF PELVIC SUPPURATION.

By J. J. GURNEY WILLIAMS, M.D.,
PHILADELPHIA.

In presenting this paper I desire very briefly to refer to what many of you have treated so fully in papers and discussions: the importance of an apprenticeship in operative gynecology. I presume most of you realize that the modern apprenticeship differs greatly from one a quarter of a century or more ago, when the specialty was being developed by men with large and varied professional and surgical experience. Again, the nature of the work in those days differed greatly from the modern. Aside from the plastic work, vesico-vaginal fistula and perineal surgery, which largely interested the specialty, ovariotomy for cystoma only was practised by the so-called masters or pioneers. The apprenticeship then was a long one, but the variety of operations small and the procedures simple. The removal of a simple cystoma in the hands of the modern operator is play or recreation, compared with the great number of extensive and multiple operations done in the pelvis and throughout the abdominal cavity. We now do a variety of operations on the liver and gall-bladder; the kidneys are incised, drained, and partially or wholly removed. The numerous bowel operations are about all modern. Nothing more than puncture of pelvic accumulations, serous or puriform, was practised a quarter of a century ago. Now the operations in the pelvic basin are heroic and difficult in the extreme; the removal, and clean removal, of all pelvic suppurations requires an apprenticeship and prolonged study in practice, that are to be gotten only by association with some master in abdominal surgery, who educates your fingers, teaches you surgical judgment, courage, and endurance.

Observation alone was sufficient for the old apprenticeship, and that was about all many of you got. It was necessary for some of you to re-educate yourselves at large expense of time and money. Just here I want to say that the hospitals, now so common in every state and city, are not giving their resident physicians the practical education or using the great amount of material at their command for that purpose. I can speak from experience of this matter; for, after serving in two large hospitals thirty-six months, it was necessary for me to go elsewhere for my practical instruction and apprenticeship desired. All hospitals should be practical schools for the residents, and the visiting medical and surgical staff the faculty. Early in the history of pelvic suppurations antedating the present school the methods practised were conservative in nature. The contested procedures used at present are not new, as about all the evacuation or puncture methods were anciently practised. They have never been wholly rejected, but used as palliative or tentative measures, and we occasionally hear them spoken of as Jones's, Brown's, or Smith's method. Many of the so-called new procedures were used in the time of Hippocrates; and it is my impression that they were better done then than now, as they used caustics and the cautery and drained through wounds that were not easily infected. The modern operator makes generous incisions or punctures, and some wriggle their fingers freely through the opening. These old procedures almost died, because the modern gynecologist sought more complete methods of dealing with pathologic conditions that they had failed to relieve or cure by these ancient measures.

Should I be asked what my understanding was of conservatism in the treatment of suppuration of the uterine appendages, I would answer, that method of treatment which will remove pathologic conditions, relieve suffering, permit a woman to perform her household duties or society affairs, save her months in bed and thousands in dollars. Accepting this view, it would appear that the most conservative procedure is the most radical—*i. e.*, remove the pathologic conditions by an abdominal section. In speaking of conservative treatment in this paper I have used it in the sense ordinarily understood as vaginal incision, suprapubic puncture, electricity, massage applications, and the like. I think we all agree that in many cases the question

of operation is seldom thought of in the mild, non-specific, non-puerperal inflammations of the tubes and ovaries; but there has grown up a tendency to treat pyosalpinx and ovarian abscess by conservative non-surgical and conservative surgical methods, and it is of this class of cases that I wish particularly to speak.

First let us take up the question of diagnosis. On what patients are we to try conservative non-surgical means, on whom conservative surgical procedures? I take it that the question of what "cocci" are present is one of importance to those who treat a pus tube or ovarian abscess by non-operative means, but amounts to little to those men who wish to remove the pathologic condition and prevent reinfection, which is very likely to occur, of virulent "cocci" in a sterile pus sac. By what means can we arrive at the conclusion that an abscess contains such and such infection previous to a bacteriologic examination? Do the symptoms tell us? Sometimes, but by no means always, as I have seen pus tubes, the size of a small sweet potato, filled with gonorrheal pus, give practically no symptoms; on the other hand, I have observed a small adherent tube, containing perhaps only a drop of fluid, creating intense pelvic pain, fever, sweating, dysmenorrhea, etc., compelling the woman to give up all work and making her a chronic invalid. Again, is it always possible to differentiate between an ovarian abscess, a suppurative appendicitis, an extrauterine pregnancy, and a dermoid? This illusion is from a subjective point of view, but had you seen the cases early in the history of the disease the objective symptoms would usually make the diagnosis easy.

Taking the abscess cases, I believe 90 per cent are due to the gonorrheal virus, and any conservative non-surgical or conservative surgical method is simply a waste of time and the patient's money. I have been compelled to use conservative non-surgical methods on many patients of this class, on account of their refusal of operation, and have used faithfully the various treatments, always with the same result—temporary benefit followed by relapse—and later, in some of these patients, have had the opportunity of verifying the diagnosis and counsel for early operative interference primarily advised.

That in 60 per cent of these cases the pus is sterile is a poor argument against operation, as the woman is liable to acute in-

fection at any time, besides being a sufferer from chronic abscess, adhesions, and the like. Great numbers of these sufferers have been and are being treated by vaginal massage, the rest cure, a winter in Southern France, Florida, or California, the various baths, etc., and numbers have come and will come demanding that some operation be done to relieve them. Many are anemic, nervous, worn-out, prematurely old women, penniless and hopeless. Granting that a few will be benefited by these methods, it is only temporary, and it takes little to put these patients in bed with all their old suffering; besides, each new inflammatory attack, due almost always to leakage from the tube, but adds to the adhesions and makes more difficult the removal of the pathologic conditions, which sooner or later becomes necessary to cure our patient. Dilatation, curetment, and prolonged drainage of the uterine canal for a pus tube is a most unsurgical procedure. The opening of the uterine end of the tube, in the great majority of cases, is little more than a fine white wire, and even after removal of the specimen it is rare that we can squeeze out a drop of pus from the uterine end of the tube. Again, supposing the nearest pocket of the uterus be emptied, two or sometimes three distinct abscess cavities remain undrained.

To take up the question of conservative surgical means by vaginal incision and drainage is to open the road for many widely different discussions and arguments. What has driven many men to this procedure and to conservative abdominal operations? First, high mortality suprapubic—some say from 5 to 25 per cent—and, second, inability to remove the pathology, compelling them to puncture or cut away one tube, half an ovary, or abandon the operation with the excuse inoperable, congenital malformation, or indistinguishable, and then look only on the favorable symptoms which sometimes follow. Great things are claimed by the men doing vaginal incision, but, I ask, what becomes of many cases on whom they have operated? Perhaps 25 per cent is about the correct number who return for a subsequent abdominal section. A certain per cent, quite large, go to other men to be relieved of their sufferings. I sometimes wonder if these men have ever made careful post-operative examinations of specimens removed by the abdomen, and have seen the multiple pus pockets of the tube separated by strictures. Have they noticed the bowel adhesions, the adherent appendix,

the fixed omentum and retroflexed uterus, or the little collections of pus due to leakage from the tubes? If so, do they drain all these pockets? Do they reconstruct, relieve adhesions, remove the appendix, and bring the uterus forward by an ever so careful vaginal incision and drainage? Who would like to treat a suppurative appendicitis by incising the vaginal vault and putting in a gauze drain, when we can open the abdomen, relieve adhesions, straighten all the S's and 8's in the bowel, remove the appendix, flush the abdomen, and drain?

To those who claim a 2 per cent mortality by vaginal incision I would answer that it should be no higher by the abdominal. As to the other objections, those of scar and hernia, the first is seldom given much thought by sufferers such as these patients are, and hernia should not occur in more than 2 per cent of cases, which is a matter of little importance when we stop to think of the results obtained. I have had, more than once, women come to me begging that something, anything, be done to relieve their suffering; and when I have explained the total removal of the abscess, they answer: "Yes, I want that done, as I would rather die under the operation than live suffering as I am." Many of these primarily relieved by punctures, later demand something more radical for their relief or cure, and all are disappointed when they learn that there is risk of reaccumulation or repuncture and that they still carry their pathology. The arguments concerning our unsexing the woman, abolishing menstruation, and compelling the patient to go through an artificial menopause are answered by the woman's being already unsexed, marital relations being unbearable, the operation at times bringing back sexual desire; besides, the menstruation is often accompanied by intense suffering, and the menopause phenomena should be slight if the patient can rest and is carefully treated. In the wealthy class the woman may elect to be a chronic invalid and go through the long treatment of rest, baths, massage, etc., but picking out the temporary good which will result and applying it to all cases is not in accordance with modern gynecology.

There has been and is to-day too much conservative treatment taught in our medical schools regarding pelvic suppuration. I mean that the young man has no practical experience in abdominal surgery; he sees some professor do a few sections on these

cases, and is then taught the various conservative non-surgical methods which should be tried—the Brandt treatment, douches and applications for pathological conditions which would not be so treated at any other point of the body. The old office treatment of pelvic pathology was and is receiving money under false pretences. But few good gynecologists of to-day use their offices for more than diagnostic purposes, and seldom charge ten dollars every five days for a touch of iodine, ichthyol, or carbolic acid and a little cotton ball with a string attached. I grant that it is quite impossible to teach a student abdominal surgery while at college, but why advocate to those men who are able to operate methods which are unsatisfactory and unsurgical?

I have already said the results are largely responsible for the change of route in our surgery, but, I ask, what are the honest results, both primary and remote, of these vaginal procedures or of the conservative non-surgical methods? Good, no doubt, in some few cases, but in how many, and are they nearly so good as those obtained by abdominal section? The early reports of abdominal sections for puriform disease in the female pelvis were considered wonderfully good, and now, although vastly better, they are spoken of as unsatisfactory and poor. At the present time we hear that vaginal incision and drainage is *the* operation for brilliant results. Which are we to believe? Surely we should not accept the reports of vaginal incisions unless we are prepared to accept the early reports of abdominal sections. These papers and discussions have been demoralizing to the general practitioner; in the society meetings he listens to papers of the palliative men; the puncture and incision school, and the suprapubic school, and he naturally asks, Whom are we to believe or follow? Let me say here that while these men are talking before our county, state, and national societies about their fine results with incision and drainage, other men are doing abdominal sections on these same patients to remove the pathologic conditions. The plea that pregnancy may follow conservative surgery is to me a very poor and dangerous one. We ask a tube disintegrated by blood, pus, or water to perform its normal functions by withdrawing its contents, and we compel forty women out of every hundred to lead an invalid's life for one poor, unhealthy or ectopic baby. Joseph Price gave a very adverse judgment on this operation by saying that the vaginal puncture or incision

for puriform disease or for purpose of exploration are unsurgical procedures. He states that he has never known a patient cured by this method, and considers it not only blind but incomplete. Since the publication of this opinion I have talked with him more precisely as to his opinion, and he tells me that since expressing this view he has operated upon four published cases and recorded cures previously operated upon by incision and puncture, two of these by the same author, and two of his cases remain on his list for operation. He states that he has never seen a case coming from other surgeons that he considers much benefited; they were all bent by pathology and all invalids.

Salpingostomy is unsurgical and favors the possibility of a misplaced pregnancy, as we can hardly ask the disorganized tube to regenerate. Goldspohn's method of opening up the occluded end of the tube must be a very difficult procedure, and when the tube contains pus with two or three strictures it would be a hard matter to "milk out" the contents. Fernand Henrotin reports some 250 conservative operations with 40 per cent of partial cures or failures. It is but fair to state, however, that a large number of this 40 per cent had had conservative methods used previously. Jaquet gives statistics of "3,000 postmortem examinations, in which 1,000 presented adhesions, 850 showing general matting together of the pelvic organs"; and certainly this is not encouraging to those advocating vaginal incision.

A few hours previous to writing this I saw two cases of large ovarian abscess, each the size of a fetal head, low down in the pelvis, nicely situated for a vaginal puncture. It was fortunate for the poor sufferers that this method was not chosen, as the first was a tubercular abscess strongly adherent to bladder, bowel, and pelvic wall, consisting of some twenty pockets. Any one of these, or perhaps six or eight, by careful puncturing would have been opened, leaving ten or fifteen unopened abscess cavities. The second case was a gonorrheal abscess of the right ovary fixed to large and small bowel, bladder, and appendix, general matting together of the pelvic viscera, and omental fixation to bladder. Both of these cases had been horrible sufferers for months, both had undergone conservative non-surgical treatment, and both had contracted the opium habit; what would have been accomplished by vaginal incision

in these two cases (and there are hundreds similar)? Nothing but harm. I wish to report an acute case which I operated upon the first day of this month. The extent of the pathology was great pus and filth to umbilicus, big ovarian abscesses, and pus tubes all leaking and within the fifth abscess; the sigmoid lifted and carrying the pus accumulation on left side, ileum and omentum on right. The great pus cavity was evacuated, tubes and ovaries removed, toilet, drainage, and recovery. Had I punctured I should have been pleased by the evacuation of a quart or more of pus. But, for that matter, any one could have turned my patient over and through a small incision removed more than a pound of pathology, the big suppurating tubes and ovaries, and have been more pleased, and I am sure he would have had more grounds for rejoicing that he had done the right thing by his patient.

Some men are inclined to divide their patients into two classes, the well-to-do and the poor dispensary patient, and advocate radical procedure with the latter class and conservative methods in the former. This social status of the patient seems to me all wrong; for if we can send a poor woman to the wash tub, why not send one of the "400" to her opera box? Class distinctions should not enter into the matter of giving the patient our best; if we are able to give to the lower classes a prolonged and happy life, should we not give to the wealthy the same? The woman, as I have already said, may elect the invalid's life, but that is no reason why she should be urged to do so. Again, the influential wealthy patient is the one most needed to the community and commands that our best be given her, as she is the most useful citizen, the one we can least spare. I ask again, what is the difference between the dispensary patient and the well-to-do when it comes to relieving suffering and sending them to their duties? I quote the following from a paper recently published on this subject: "Thus it may be seen that, by varying our mode of treatment to conform to the ever-changing conditions, we may unquestionably carry many of our patients through the various troubles of pyosalpinx over a period of several years, notably relieving their sufferings during the exacerbations of the chronic ailment; when by repeated inflammatory attacks the wall of the pus sac has grown thick and the pus has lost its virulence, a fresh attack of pelveo-peritonitis

need hardly be feared. Thus ends the tedious story of the sufferings of these patients, for they may now be considered to all intents and purposes cured, although there remains a little sterile pus within a thickened sac." To this I answer that the life history ends for the pauper in the poor house; the "tedious story" for all classes ends with death from amyloid degeneration, renal trouble, or chronic infection. What becomes of the ever-nagging adhesions, the many reinfections, the 28.3 per cent of the general matting together of the pelvic organs? Do the adhesions melt away like dew before the sun? Do we prevent reinfection by our careful method of conservatism? Surely it is not comforting to our patient to know that the condition of "thickened pus sac" and "sterile pus" has to be reached by repeated inflammatory attacks with their concomitant agony and danger.

In deciding the question of route it is well to keep in mind the conditions which are liable to be present within the abdomen. Some of these are omental adhesions to bladder, abdominal wall, or bowel, an adherent—5 to 10 per cent of all cases—and perhaps suppurative appendicitis, a retroflexed fixed uterus. and small collections of pus from the tubes situated high up in the pelvis. There may be general adhesions of large and small bowel. Can you do by the vaginal route all the reconstruction work necessary which can be done by the abdominal? Can you relieve adhesions, release a fixed uterus, bring and keep it forward, when necessary remove the appendix, control oozing, flush and dry your field of operation, and make the careful toilet necessary by the vaginal incision and drainage? It is interesting to note, in a paper before me, that of 49 vaginal incision and drainage cases, about all for puriform disease, 10, or over 20 per cent, underwent a subsequent abdominal section, 5 had a secondary incision performed, and in 6 the results are not known. Of 5 abdominal incision and drainage cases, 1 was reoperated upon for ventral hernia, and 3 underwent a subsequent abdominal section. Four of the 5 were puerperal cases.

In conclusion, so much has been said about the simplicity of puncture methods and drainage by the vaginal route, with speedy relief and recovery, that I wish to say here that, aside from the mortality, which is not small, the number of invalids leaving the hospitals is very large. The return to the same or

other hospitals for reincisions or for section is large; and when one who does such work is thoroughly familiar with the post-operative conditions of both classes of cases, he is convinced by his every-day experience that the results and recovery from the suprapubic method of clean extirpation or of drainage only in the desperate cases, feeble, exhausted, and dying, with an unpleasing history of discharge of pus—I say that he is convinced that the mortality is smaller and the recoveries more pleasing by abdominal section than from any other procedure, ancient or modern, now practised. From prolonged observation and practical experience I cannot make this statement too strong. I have now in bed recovering three or four negresses, all of whom would have been considered bad subjects for abdominal surgery in most hospitals, all of whom would have been punctured. The suppuration was extensive, the involvement of surrounding viscera not less so, and the enucleation difficult. But no complication followed the procedure. You may make a mental picture of just what would have remained in the pelvis following vaginal incision or puncture in these cases.

DISCUSSION.

Dr. Charles Greene Cumston, of Boston.—I believe when one discovers that he has been led into error he should admit it, and this applies particularly to various operative techniques and their results. Several years ago I was a strong advocate of posterior colpotomy in pelvic suppuration, and I have published several papers on vaginal incision and drainage in the past. Please bear in mind that I am not now referring to total vaginal hysterectomy for suppurative disease, because I have practically abandoned it, excepting for those cases where the disease has remained limited and has not involved the surrounding structures to any extent.

In 1899 I published a paper in the *Boston Medical and Surgical Journal* wherein I advocated posterior or anterior colpotomy for pus in the pelvis, and at that time I was under the impression that a number of these cases had proven conclusively that the cure of the patients was permanent; but in a large number of them I was obliged to do a total hysterectomy in the course of the next few years following the vaginal operation, and these were some of the cases that had been considered cured and which were reported in the paper above alluded to.

With much more experience now, I have no hesitation in saying that anterior or posterior colpotomy in pus cases is usually an incomplete operation. I resort to vaginal incision in cases where the collection of pus is large, with an extensive inflammatory process going on in the small pelvis, and under these circumstances I believe that this is the proper operative procedure. I would also point out that, as a preliminary operation to suprapubic hysterectomy, I believe much advantage may be gained by first draining the pus pockets through the vagina, but colpotomy alone will only cure permanently a few selected cases where one tube alone is involved.

In my paper on perforated pus tubes, which I shall have the honor to read shortly, I have dealt more fully with the matter of drainage in severe cases of pus in the pelvis.

One thing more occurs to me, and that is, some one has said that puncture followed by drainage was the treatment they employed, but I wish to say that, in my way of thinking, this is most unscientific, unsurgical, and dangerous, and that if pus in the pelvis is to be drained by the vagina, a free incision with scissors into the posterior or anterior cul-de-sac is the proper way to proceed.

DR. HOWARD W. LONGYEAR, of Detroit.—Some twelve or fourteen years ago I read a paper before the Michigan State Medical Society in which I took precisely the same ground that the essayist has in his paper—namely, that in cases where there has been an acute gonorrheal infection of the appendages, it means either operation or chronic invalidism to the woman. I have changed my mind since then, because of a riper experience, as I have treated a number of women who are perfectly well and have remained so for years, who had acute gonorrheal infection of the appendages, whom I was able to treat from the beginning of the infection, and I now feel that there are cases in which we can bring about a complete cure, so that they will be absolutely well afterward. My usual plan is, when I have a case of acute infection of that kind, to use an ice-bag externally during the febrile activity of the disease, hot vaginal douches, and the internal administration of urotropin, with saline laxatives, and by this treatment I have succeeded in curing a number of patients completely, without any relapse.

DR. MCMURTRY.—Do you mean that you have cured cases of acute infection?

DR. LONGYEAR.—Cases of acute infection; whether pus had formed or not, I do not know. They were cases in which the tubes and ovaries were buried in masses of exudate, and the whole vault of the vagina was hard and board-like.

DR. MCMURTRY.—The acute stage?

DR. LONGYEAR.—Yes; I am not talking about the constantly recurring cases. I agree with the author of the paper on that

subject. I am simply talking about the acute attack. I do not believe we can expect to *cure* cases of pyosalpinx by vaginal incision. The place of the operation of vaginal incision is simply to drain those cases in which we find by the aspirating needle, or other methods, that the infection is due to the streptococcus. In such cases it is wise to drain until we get the patient in a safe condition to operate by the abdomen. Where we have streptococcic infection, if we operate by the abdomen, without resorting first to vaginal incision, nine out of ten of them will die. If we make a vaginal incision and drain until the discharge has ceased, we can operate by the abdominal route afterward with comparative safety. That is the only place for vaginal incision and drainage. If we have a case of pyosalpinx with persistent high temperature to deal with, we should suspect streptococcus infection, and here we should establish the diagnosis by the use of the aspirating needle, drawing off some of the pus, examining it, and if we find the streptococcus we should drain by the vagina first, and follow it by abdominal section when it is safe to do so. If we find the colon bacillus or the staphylococcus, it is safe to operate through the abdomen at once.

DR. L. S. MCMURTRY, of Louisville.—I desire to emphasize the point that it is a good plan in some cases to make a vaginal incision, just as the last speaker has explained. In cases of advanced sepsis, where the patient is greatly emaciated and reduced to an extreme condition, many of them can be tided over or saved by vaginal incision and evacuation of a certain amount of abscess formation, then built up, and afterward they can be safely submitted to thorough operation. I think this is the extent of the value of vaginal incision, and it is becoming generally recognized that thorough work by abdominal section and removal of the sac are the only curative measures.

ICE FOLLOWING ABDOMINAL SECTION.

By F. F. SIMPSON, M.D.,
PITTSBURG.

Scrupulous cleanliness intelligently applied gives almost absolute security against bacterial peritonitis from abdominal operations in clean cases. Yet even in these cases we find, to a very limited extent, the cardinal symptoms of inflammation localized about the field of operation (and evidenced by slight pain, tenderness, disturbed function of intestines, elevation of temperature, and slight acceleration of pulse rate). This reaction is always present and is apparently due solely to traumatism. Less often it happens that a few bacteria gain entrance in spite of what seems to be a faultless technique, and a more marked inflammation of a wider area gives more decided symptoms. *Rarely* the attack is serious. The unclean cases naturally divide themselves into two groups: first, those in which the existence of a frank attack of peritonitis shows that more or less virulent organisms are present and that they have not been subdued; and, second, those in which peritonitis was present but has subsided, indicating that the bacterial invasion has been successfully resisted for the time. at least. In these cases the bacteria may be quiescent, dead, or absent.

Peritonitis often follows the removal of the products of inflammation from the pelvis. When bacteria are absent, dead, or depressed, the acute attack is localized, limited in degree, and usually of little significance. It may leave adhesions or an infected pedicle; usually no trace of its existence remains. While the infecting bacteria are numerous, active, and virulent, however, the danger of peritonitis is great, the attack may be severe, the results serious. If the foregoing statements fairly represent current views, the prevention or control of post-operative peritonitis, local or general, traumatic or bacterial, is a matter of practical

moment, for it frequently has an associated morbidity and at times a mortality as well.

I believe that post-operative peritonitis may often be prevented or controlled, and its products and mortality correspondingly lessened, by the proper use of ice. This opinion is based chiefly upon clinical observations concerning its effect in several hundred cases of pelvic peritonitis due to diseased uterine appendages; upon the use of ice to relieve pain and as a prophylactic and curative agent after operation in some hundreds of cases; and upon some experiments designed to show the effects of ice when applied to the abdomen. For quite a number of years it has been our custom to employ ice in the treatment of localized peritonitis consequent upon inflammatory affections of the pelvic organs. In these cases we have usually seen—as all of you doubtless have—the local and constitutional symptoms subside very quickly. In fact, the cardinal symptoms have disappeared so speedily that the distended, tender, tense abdomen has become soft and flat and opiates have rarely been needed to control pain. In several hundred of these cases our mortality has hardly exceeded one per cent.

The following is typical of the more serious forms of the disease in which we have relied chiefly upon ice as a curative agent, other remedies being used to guard weak points: Mrs. P. was seen by Dr. Werder in 1899 after several attacks of pelvic peritonitis. Examination showed large pus tubes on both sides. Extirpation was advised, but declined. August 19, 1899, during Dr. Werder's absence from the city, I was asked to see her. At 2 P.M., while sitting quietly on her porch, she "felt something give way in her left side," had some pain, and went to bed. When first seen, eight hours after this attack, her abdomen was moderately distended, rigid and tender. Her pulse was 120 and temperature 102°. She was vomiting frequently and her expression gave evidence of great pain. Her surroundings and condition were such as to make an operation very hazardous. She preferred delay. Operation could not be insisted upon. Morphine was given for the pain, strychnine was ordered, and two ice bags were put upon the abdomen. Twenty hours after onset her entire abdomen was ballooned, was tender, and she suffered intensely. Peristalsis was absent. Projectile vomiting was almost continuous. Her temperature was 103°. Her pulse was 148 and small,

though the heart sounds showed a fair muscle. Her condition was far from reassuring. Permission to operate was absolutely refused. It was then determined to use ice for its full effect. A pillow case was filled with it, and, when applied, the entire abdomen was covered by a layer about four or five inches thick, extending from the bed on one side to the bed on the other, and from the xiphoid to the symphysis. It was kept in this position in this way for more than five days and nights. For four days iced champagne was the only thing retained by the stomach. Vomiting was frequent. The pulse remained between 140 and 150 and the temperature varied but little. Within a few hours after ice was thus applied the abdomen was cold, red, and less tender. In forty-eight hours it was less rigid and slightly less distended. By the fourth day it was soft and she was very nearly free from pain. Though internal medication and enemata were repeatedly used, neither gas nor feces were expelled till the fourth day. The fifth day her general condition was decidedly better and her pulse rapidly dropped to about 90. A fluctuating mass surrounded by adherent intestines was found in the left iliac fossa, and wide daily variations of temperature left but little room to doubt that it contained pus. The mass grew small. The temperature and pulse came to normal and remained there. She again declined operation and was lost sight of.

After having seen many grave cases of this kind yield so favorably to this measure, and having seen a few of them die later from peritonitis following an abdominal section which removed the great bulk of filth, leaving but little behind in a fairly clean cavity, it seemed to me that, with the same infecting organisms active in large numbers before operation and in small numbers after operation, we might expect like results if the same treatment were employed in the two classes of cases; and, further, that by beginning the use of ice before peritonitis had actually developed we might succeed in preventing that complication. (No claim is made to originality in this matter, though at the time we began using it systematically I was not aware of its previous employment for the same purposes.)

The conclusion seemed rational, and we began putting bags of ice (one to five, close to the skin) on the abdomens of patients in whom we feared that peritonitis might develop. The results during the last four years have been highly satisfactory. Many

patients who experienced relief from pain by the use of ice before operation have asked for it after operation. Many have complained at first of the weight of the ice, but were soon so much relieved that they felt uncomfortable while the bags were being refilled. The smooth convalescence of many patients in whom inflammatory reaction might naturally have been looked for leads me to believe that in not a few instances such attacks have been averted. The recovery of several patients who have been reclaimed from what appeared to be almost certain death forced the conclusion that it is a life-saving agent.

Though palliative measures are not advocated where grave explosive lesions, such as intestinal or appendical perforations, are threatened or have occurred, it does seem that, after the surgeon has cleansed the abdominal cavity as best he can, we have in the local use of ice a valuable remedy. It is used with good results at the beginning of inflammation everywhere else in the body. It is worthy of a more general application here. Theoretical objections have disappeared as we have become more familiar with its use. In my experience no injury to the skin has followed its use; the healing of wounds has not been retarded by it; and no depression of the general system has been observed. That cold penetrates deeply into the abdominal cavity and may produce its effect directly is shown by some careful experiments which Dr. Letive has very kindly made for me, and by observations on man made by Dr. Schlikoff and summarized by Dr. Granger, of New Orleans, in a recent article on the use of ice as a therapeutic agent. His own observations are also of interest.

In our experiments on dogs the surface and rectal temperatures were observed for more than an hour. They did not vary from 38° and 38° respectively. Another thermometer was introduced into the pelvic cavity through a small lateral incision just below the ribs. The surface temperature quickly dropped two degrees; again the surface, rectal (or vaginal), and abdominal temperatures remained stationary for more than an hour, reading 36°, 38°, 38°. Ice was then applied to the entire surface of the abdomen. The general surface temperature was not affected after some hours. The skin under the ice reached a temperature varying from 8° to 16° C. in different dogs. The thermometer close under the abdominal wall recorded 26° C., while deep in the pelvis it fell as low as 34° and remained stationary for more than

an hour. The rectal (or vaginal) temperature was 2° higher (36°), though the bulbs of the two thermometers were separated only by one-eighth of an inch. Ice was removed. Within an hour all temperatures reached their ascertained normal. With another application of ice the temperatures showed the same variations as had just been recorded in the same animals. The animals were not injured.

From these experiments it would seem possible to produce, at the seat of inflammation, a degree of temperature which greatly retards the growth of pathogenic bacteria, and which contracts the blood and lymph channels, thus relieving the congested vessels and checking the serous weeping into the cavity. These results may be accomplished without effect on the general temperature and without apparent detriment to life or tissues. Practically we may conclude (and there is abundant clinical evidence to support this view) that as peritonitis subsides its cardinal symptoms grow less evident, and the resulting morbidity no longer increases. Pain, which is one of the most distressing symptoms, becomes less annoying. Ice should be used for its effect, just as calomel, salts, or other remedies are. One bag on top of a thick dressing of cotton and gauze is, of course, without value. For the relief of traumatic pain one or two ice bags over a thin dressing usually suffice. But where a frank attack of peritonitis is feared or actually exists four or five bags of ice should be kept in place day and night. They should be separated from the skin only by a towel, a binder, or a very thin gauze dressing.

Contraindications.—Cold should never be used to the exclusion of other well-known medical and surgical principles and measures. Formerly I looked upon post-operative kidney lesions as contraindicating the free use of cold. But more recent experiences lead me to believe that if a serious peritonitis is feared we may use extreme cold to the abdomen, and that it will be far less harmful than the inflammation it prevents or checks. When grave post-operative peritonitis is likely to develop, or when it actually exists, I believe there is *no* contraindication to the free use of ice locally. But when merely a slight traumatic reaction exists, this measure had perhaps better be omitted in the presence of nephritis, of a tendency to catarrhal enteritis, attacks of which are precipitated by exposure to cold, and where rheumatic and bronchial attacks follow slight chilling. Not a few patients com-

plain of greater pain soon after ice is applied. When the pain is due to a well-defined abscess with very little peritonitis, and when it is of intestinal origin, hot applications probably serve a better purpose. But when the patients complain of pain caused by the weight of the ice, that symptom points to the existence of active inflammation and constitutes the most urgent indication for more intense cold. It has been our custom to add more ice in these cases, and the results have justified the practice.

With your permission a brief report will be made of a few cases in which, it seems to me, life was saved by the local use of ice. Several others might be recorded, but their recital would be but a repetition of what follows. Simpler cases in which the morbid products of inflammation seem to have been prevented by a timely ending of the disease will be omitted for lack of time.

CASE I.—Mrs. C. had recently recovered from a sharp attack of pelvic peritonitis and cellulitis when referred to me by Dr. C. H. Hayes, of Pittsburg. The uterus was retroverted. Two pus tubes and cystic ovaries were bound firmly to the adjacent structures, the left being fixed to the pelvic wall by a rigid, mortar-like exudate. There was a positive history of gonorrhea just preceding the attack. The cellulitis indicated a mixed infection.

Vaginal hystero-salpingo-oöphorectomy was done April 30, 1901. Enucleation was difficult. Free bleeding from extensive raw surfaces could not be controlled by clamps, but was checked by firm pelvic gauze packing. She left the table with a pulse of 166. After 1,000 cubic centimetres of normal saline solution slowly given into a vein, it rapidly fell to 100 and a few hours later to 90. During the first twenty-four hours there was but little further variation of the pulse. She was very restless and suffered much pain from the tight packing. There was no vomiting whatever till the beginning of the second day. After that she vomited repeatedly, complained of tenderness, became slightly distended, and the pulse rate was 110. She was put in Fowler's position and two ice bags were applied direct to the abdomen. A slight movement from the bowels followed an enema. At the end of forty-eight hours the clamps were removed. Eight hours later the abdomen was very much distended and very tender. Peristalsis was absent. Projectile vomiting of quantities of a slightly green fluid was frequent. The pulse was 120 and not good. Dur-

ing the third day vomiting was almost continuous. Expulsion of gas could not be effected by medication or enemata. The abdomen was greatly distended. The pulse had grown more rapid and weak. The pelvic gauze was removed and adhesions were freed. A little bloody serous fluid escaped. During the fourth day vomiting of dark-brown fluid having a fecal odor continued at frequent intervals. All efforts failed to cause the passage of flatus from the bowels. The abdomen was still distended. The pulse was frequent, irregular, thready, and very weak. Her extremities were purple and cold. Percussion demonstrated the presence of some free fluid in the abdominal cavity. The abdomen was continuously covered with ice. To the extremities hot applications were made. The fifth day the abdomen was less distended, soft, and not tender. Peristalsis gradually returned. Vomiting gradually ceased. She retained some nourishment and bowel movements were induced. A smaller quantity of fluid was found in the abdomen. Thus far there was but little change in the character of the pulse. The sixth day the pulse grew fuller. slower, stronger, her peripheral circulation was good and her expression better. From that time on her convalescence was rapid and uninterrupted. Before leaving the hospital she was examined and no products of her severe peritonitis were found. Some months later she was in perfect health and reported that she had had no discomfort whatever. In this desperate case the ice apparently controlled the inflammation before a fatal dose of poison had been produced by it. The absence of demonstrable adhesions is more than could ordinarily have been expected.

CASE II.—Mrs. T. was sent to me by Dr. John W. Dixon, of Pittsburg. She had firmly adherent, closed tubes and cystic ovaries. They were removed by abdominal section. The operation was not especially difficult and a speedy recovery was expected. No bacteriological report from the tubes was obtained. Occasional vomiting ceased after a few hours, and at the end of the first eighteen hours nothing suggested trouble except a pulse rate which had increased about fifteen beats. After that she complained of considerable pain. The abdomen became distended and tender. Peristalsis was markedly diminished, if not quite absent. Vomiting of a light-green fluid occurred at frequent intervals. There were frequent eructations of gas, but none was expelled by the bowel. Her pulse rapidly rose to 120

and then 130, her temperature to 103°. At the end of thirty-six hours after operation the patient was put across her bed and the cul-de-sac opened without an anesthetic. About three ounces of a bloody serous fluid escaped. A rubber tube was inserted, but very little drainage occurred. At the end of twenty-four hours more it was surrounded by adhesions and was quite useless. All the abdominal dressings, except a thin layer of gauze, were removed when the probable existence of peritonitis became apparent, and several bags of ice were applied. They were kept constantly full. During the third day her pulse gained in strength and volume, the congested peripheral circulation and temperature remained unchanged. Toward the end of the day, however, the abdomen was less tender and softer. Peristalsis returned. The expulsion of some gas followed the use of enemata. But vomiting was spontaneous and was induced by medicine, food, or drink. By the end of the fourth day the abdomen was soft, peristalsis good, food and drink were retained, and an improvement in the character of the pulse was observed. It was normal by the end of the sixth day. But the temperature did not reach normal till the eighth day. After that her progress was speedy and satisfactory. She has suffered no inconvenience from the attack of peritonitis which so seriously threatened her life. Ordinarily a post-operative peritonitis which shows so abrupt an onset and such pronounced symptoms during the first thirty-six hours, terminates fatally within a very few days. I believe the free use of ice fortified her powers of resistance and turned the balance of power in her favor.

Though the foregoing cases were most gratifying, a favorable termination in the one which follows was quite unexpected.

CASE III.—Miss L. had adherent pus tubes. November 2, 1901, vaginal hystero-salpingo-oöphorectomy was done by the clamp method. There was no especial difficulty. For twenty-four hours her condition seemed very good. About forty-eight hours after operation the clamps were removed. Her abdomen was somewhat distended and tender. Her pulse became somewhat faster and her temperature began to rise. Without effort she vomited a quantity of dark-brown fluid at frequent intervals, and at the end of the third day she was suffering considerably from distension and pain. During the fourth day the pelvic gauze was removed. Examination showed that no adhesions separated the

vaginal vault from the general peritoneal cavity. Some bloody serous fluid escaped. Stimulants and enemata seemed entirely without effect. She grew decidedly worse. The fifth day numerous enemata were expelled without gas. Eructation and vomiting persisted. Her circulation was very poor, the pulse very rapid, the extremities purple and leaking. By this time the abdomen had become less distended, soft, and pressure caused no pain. The sixth day the abdomen was soft and flat, vomiting was less frequent, and some gas was expelled after enemata. But her temperature was 102°, her features were pinched, her extremities were cold, purple, and leaking. Her pulse was thready, intermittent, and could not be counted at the wrist. The carotid artery showed 172 beats to the minute. I left the hospital at 2 A.M., thinking she would be dead before morning. But fortunately the turning point was reached. She slept some the latter part of the night and at intervals during the morning. Gas was expelled voluntarily. The pulse was of better volume, less frequent, and stronger. The extremities were warmer. Five full ice bags had been kept in contact with the abdomen since the first symptoms appeared, and were continued for several days more. Her recovery was rapid and smooth. She left the hospital four weeks after operation and has been well since. In this case I believe the peritonitis was severe and that while it lasted considerable poisonous fluid collected in the abdomen; that the ice checked the inflammation, and that the production of poison practically ceased when the abdomen became soft and flat on the fifth day; that the remaining fluid continued to be absorbed and to act as a powerful depressant to the circulatory apparatus; that by the end of the sixth day this had all been absorbed, and that with its elimination the vital functions were gradually restored to the normal. It is evident that the poison was very nearly fatal and that had its production continued it would doubtless have proved so. We so rarely see so grave a peritonitis subside so unexpectedly that the ice surely stood in causal relation to this happy result.

The next case shows the value of ice as a hemostatic, as well as an antiphlogistic agent after operation.

CASE IV.—Mrs. X. was admitted to Mercy Hospital during a severe attack of pelvic peritonitis of tubal origin. Improvement was progressing rapidly when interrupted by an acute exacerba-

tion which lasted a few days, and then by another. The abdomen was opened. Two pus tubes were freed from extensive but recent adhesions and removed without especial difficulty. The pedicles were ligated with care and were thought to be secure. She left the table with a good pulse of 84 beats to the minute. Half an hour later her pulse was 106, and when seen by me in fifteen minutes more it was 130 and much weaker, though her color was good and the veins of her forehead were distended. The foot of the bed was raised. The rate quickly dropped to 120 and the volume was better. Two ice bags were put over the dressings. In an hour more the pulse reached 146. We prepared to open the abdomen at once, but the rate had dropped to 130 by the time we were ready. A stitch was removed and a sterile glass catheter was introduced into the abdomen without trouble or pain. Free blood was found in the peritoneal cavity, but improvement was positive. Being ready to open the cavity at a moment's notice, we decided not to interfere as long as the circulation was getting better. Very nearly all the dressings were removed and two more ice bags were put on the abdomen. Eight hours after operation the pulse was 108. It remained practically the same for twelve hours more and then progressively rose to 118, 126, 130, and to 134 at the end of thirty hours. The pus in the tubes was found to contain streptococci. With the rise in pulse the abdomen became distended and tender. The stomach was not retentive and quantities of bile-stained watery fluid were thrown up at frequent intervals without nausea, retching, or even effort. Her temperature was 101°. During the second day her urine contained albumin, many granular and epithelial casts, and a few streptococci. Her abdomen was distended and tender, but some gas was expelled after enemata. The pulse rose to 138. Her features were pinched. With this condition and streptococci in the presence of a good culture medium, we feared the worst. Previous experiences with ice gave us confidence in it. For four days the four bags were kept full of ice and in direct contact with the abdomen, except just at the incision. By the beginning of the third day there was a decline in pulse rate and in the symptoms. By the end of seventy-two hours from operation her pulse was 106. This was truly an abrupt ending of what gave every indication of being a very grave condition.

MAR 7 1905

In conclusion, your attention is called to the fact that in all these cases the local symptoms of inflammation subsided first, and that later the constitutional symptoms due to the absorption of poisons already produced likewise disappeared.

DISCUSSION.

DR. HERMAN E. HAYD, of Buffalo.—I do not know that I have listened to a paper that has interested me more than this, because it has brought out the use of ice in connection with pelvic inflammatory troubles, with which I have not had very much experience. My attention was first called to the application of ice in these cases by Dr. Pryor, who makes a very practical rule when he says that the more the condition is inflammatory the more he applies ice, and the more the pain is spasmodic, the result, for instance, of gas in the intestines, the more he applies heat. Dr. Simpson has been more specific in his application of ice, in that he says the more the patient tolerates the weight of the ice the more would he continue its application. It seems to me this is a very practical point, and from the little experience I have had in connection with ice in a limited way, I have found it of great practical utility. I never thought of applying ice to the extent he has used it, where he envelops the whole abdomen in a pillow of ice. It is a question in my mind, however, whether the application of ice would prevent the spread of a septic peritonitis. For example, a woman from whom we have removed a large pus tube or an ovarian abscess, leaving a large raw surface which forms a mass subsequently and which needs to be opened through the vagina, will present just the picture the author refers to in his paper. However, this case is not septic peritonitis. Whether it would be possible to stop the spread of a septic peritonitis by the mere application of ice, I do not know, but the paper has suggested that line of treatment to me and I shall try it at the first opportunity.

DR. JAMES F. BALDWIN, of Columbus.—I was very much interested in listening to this paper. I presume all of you have the same experience that we have in Ohio, in being called to cases of inflammatory trouble in the abdomen, appendicitis, or whatnot, and in finding the abdomen of the patient covered with hot cloths, hot flannels, or turpentine stupes. I have never been able to see that these things did any good. Since antiphlogistine has been on the market and largely advertised, it has been thus used a great deal, but I regard it as an utter abomination. I have never seen these things do any good, unless, perhaps, they relieve pain. The question that arises in my mind is this, Is the

benefit reported as following the application of ice *propter hoc*, or merely *post hoc*? If we have a patient with a fat abdomen, with an inch or more of fat and muscular tissue between skin and peritoneum, how much reduction in temperature can be made in that inflamed peritoneum? Fat is a non-conductor; muscle and skin are poor conductors. What would be the actual loss of temperature? This can only be determined by experimentation on animals presenting similar anatomical conditions, with an artificially-induced peritonitis.

To make the paper complete, it seems to me, Dr. Simpson should carry out a series of experiments upon animals presenting a fair degree of fat, with artificially-induced peritonitis; then we would have something demonstrable. He should at the same time make control experiments on other animals.

Dr. Howard W. Longyear, of Detroit.—I am much pleased with the paper that has been presented to us. It tallies with my own experience regarding the use of ice in abdominal inflammations, especially in peritonitis from any cause. I have not used it in as thorough a manner as the essayist has in the one or two extreme cases that he reported, but I have used it enough to look upon it as a prime factor of treatment in these cases. I have been especially pleased with the application of ice for the relief of pain—so much so that my patients would ask for the ice if pain returned. I usually depend more upon body temperature as an indication for its discontinuance or use again. If the temperature declines to nearly normal, I direct the nurse to remove the ice, and reapply it if the temperature rises, and in this way I do not get the too free application of the ice. Where the circulation is poor it is very essential to protect the skin a little, as the essayist has said, by the employment of gauze. This is essential. If you apply a rubber ice-bag directly to the skin, you are liable to produce sloughing. I have seen that occur in typhoid fever cases where ice has been applied for the control of hemorrhage.

Dr. Charles Greene Cumston, of Boston.—I have very little to say in regard to the interesting paper of Dr. Simpson. The essayist only reported one case where a vaginal operation was done. I would simply remark that it used to be the routine practice of the advocates of vaginal hysterectomy to apply an ice-bag on putting the patient to bed for the first forty-eight hours, keeping it there to prevent elevation of temperature and distention of the abdomen.

There is only one thing that occurs to me in reference to the application of ice to the abdomen, and that is, when pushed too far a certain amount of danger may accrue. I believe where it is applied for a local inflammation, as in appendicitis, if its application is continued too long a time, we may get sloughing of the appendix, whereas we would not get it had it been left

alone without the ice-bag treatment. For a long time I applied ice after vaginal hysterectomy, but abandoned it, and I cannot say that it made any great difference in the termination of the case.

DR. C. L. BONIFIELD, of Cincinnati.—I wish to commend the paper of Dr. Simpson because in it he reports careful and painstaking investigations. I do not believe the author claims he has proven that ice is a positive cure for peritonitis, but throws out the suggestion to us that its use may be of value, and I think the suggestion worthy of trial.

Theoretically, there are three ways to treat peritonitis. The first is to help nature limit the infection to a small part of the peritoneum; the second is by drainage or free purgation to remove all fluid, the culture material for the infective germs, from the peritoneal cavity; the third, to stimulate phagocytosis.

The first method is applicable to appendicitis before operation, to pyosalpinx in the acute stage, and also after pelvic operation performed through the vagina.

The early vaginal operators, as a routine practice, ordered an ice-bag applied after operation. It is my belief that any line of practice followed by a large number of men of ability for a considerable length of time is sure to have some merit in it, and that ice was of value in these cases.

In a vaginal operation there is little handling of the intestines, infection is conveyed directly to only a small portion of the peritoneum, and the application of ice helps to limit its spreading. In the abdominal sections there is necessarily more handling of the intestines, more dissemination of the infection, and if my theory of the action of ice is correct, its use is not indicated. It would seem to be harmful, rather than beneficial, for by slowing the blood currents it would limit the number of phagocytes that could engage in the battle with the microorganisms, and by quieting peristalsis would make it more difficult to secure a movement of the bowels.

I cannot agree with Dr. Baldwin that it is doubtful whether the temperature within the abdominal cavity can be lowered by the external application of ice. The late Prof. James T. Whittaker, of Cincinnati, was in the habit of suspending an ice-bag over the region of the heart, to slow its action in febrile conditions. That it would do so effectually I have seen demonstrated many times, and I do not see how it could act otherwise than by reducing temperature within the chest. If cold thus applied could penetrate the chest wall it ought to be able to reach the contents of the abdomen when applied to its walls.

DR. SIMPSON (closing the discussion).—The general discussion of my paper has been very gratifying. Dr. Hayd alludes to the use of large quantities of ice. In our work, that has been reserved for cases in which the patients were rapidly growing

worse; in whom we could fairly see the peritonitis spreading from hour to hour. In some of these cases intense cold has surely been of value. Of course, clinical observations cannot conform to all the laws of inductive logic. But so far as I have been able to interpret the phenomena observed, and I have tried to do it impartially, they have convinced me, at least, of the efficacy of ice in such conditions. In some instances where ice was used freely the patients have complained of feeling chilly. But in no case coming under my observation has the general temperature been reduced below normal. Hot bottles to the extremities have promptly relieved that slight annoyance.

Regarding Dr. Baldwin's reference to the effect of localized cold upon the general temperature, I would say that at the bedside, as well as in our experiments upon dogs, that question has claimed our attention. As previously stated, the general temperature of patients seemed unaffected, except by the relief of inflammation. In our experiments, the body temperature was observed for an hour. Ice was applied. The surface temperature did not vary. But the local temperature of the skin at the point of application was reduced as low as 16° C. and even to 8° C. Just beneath the abdominal wall, within the peritoneal cavity, the thermometer registered 26° C., and down in the bottom of the pelvis 34° to 33°, thus showing a reduction of temperature which varied inversely with the distance from the ice. I hardly think a reflex condition would cause that gradation of temperature. It would look as though cold has a direct penetrating effect as truly as a magnet has a definite sphere of influence. We have not experimented upon diseased animals, though such work would doubtless be of value. In man, however, Dr. Schlikopf has put thermometers into the chest cavity in cases of empyema, and into the alimentary canal in cases of gastric and enteric fistulæ, and has observed a marked reduction in temperature in fat subjects. In animals the temperature we succeeded in getting within the abdominal cavity (33° C.) was sufficiently low to markedly retard the growth of ordinary pathogenic bacteria.

With regard to the fact that ice has been generally used for a long time in cases of vaginal hysterectomy, etc., I would say that there was no effort on my part to claim anything original. I have simply given a clinical report of the application of a well-known remedy, wishing only to add my testimony as to its value, and to give my personal reasons for adopting it.

Referring to the question as to whether ice may not do more harm than good, I would say that in a considerable series of cases we had before the use of ice, contrasted with a like number of cases we have observed since its use, I believe our patients have gotten along much better with it than without it. Our mortality has been lower with it than without it.

TWO FATAL CASES OF TETANUS FOLLOWING ABDOMINAL SECTION, DUE TO INFECTED LIGATURES, WITH A PLEA FOR THE ANGIOTRIBE IN ABDOMINAL SURGERY.

By WALTER B. DORSETT, M.D.,
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Both of these cases were in women upon whom I had made ventrofixations of the uterus. The choice of the operation was made on account of adhesions of the uterus to surrounding tissues, due to previous inflammatory conditions. The suture material used was, for fastening the uterus to the anterior abdominal wall, kangaroo tendon of a little above the average size; for closing the abdominal peritoneum, catgut, sizes Nos. 1 and 2; and for the through-and-through abdominal sutures, silkworm gut. The catgut and kangaroo tendon were taken from the hermetically sealed tubes. The silkworm gut was obtained from a local firm and was in skein, but was antisepticized by a thorough boiling immediately before being used. The catgut and kangaroo tendon were the same brand I had repeatedly used before, and were prepared and put up by one of the best-known manufacturing firms of this country.

Case I.—Mrs. S., aged 25 years, married only a few months, consulted me May 1, on account of a badly retroverted uterus which was firmly adherent to the posterior wall of the cul-de-sac of Douglas. An incision in the linea alba was made May 3, 1902. The uterus, after being freed from adhesions, was brought up, and the anterior face a little below the fundus was attached to the anterior abdominal wall, with three medium-size strands of kangaroo tendon. The peritoneum was closed by means of No. 2 catgut, and the abdominal wall brought together with silkworm gut.

The patient suffered from no appreciable shock, and did well until May 7, when she complained of some rigidity about the lower

jaw whenever she would attempt to take nourishment. Later in the day there appeared a good deal of rigidity of the masseter muscle, and the case became clearly one of tetanus. At 2 o'clock on May 8, 10 cubic centimetres of antitetanic serum were injected subcutaneously, and 8 grains of chloral hydrate were given by the mouth, and repeated every hour until some sleep was produced. Later in the forenoon she complained of some discomfort between the shoulders, when, upon examination, a bright-red spot about the size of the palm of the hand was seen. This blush had an abrupt margin, and in the centre were two abrasions which were supposed to be due to scratches inflicted by the finger nails of patient's own fingers. At 12 o'clock noon 10 cubic centimetres of antitoxin were given. Marked convulsions came on, when nourishment by the mouth became impossible and rectal nutritive injections had to be resorted to. At 4 P.M. of the same day 10 cubic centimetres of cerebro-spinal fluid were withdrawn, and 10 cubic centimetres of antitetanic serum were injected into the spinal canal. Chloral to the extent of 30 grains per dose every three hours was given by the rectum, but produced little effect upon the convulsions, which increased in severity and frequency until from thirty to seventy occurred per hour. The body was bathed with perspiration, and throughout the entire illness the temperature did not rise above 100° F. May 10, morphia sulphate in quarter-grain doses was combined with the chloral to produce sleep and to quiet the nervous system. Later in the day it was decided to transfuse her with normal salt solution and a vein was opened for this purpose, but while in the act of throwing the salt solution into the vein a violent convulsion came on, which ended the scene, patient dying on the third day after the disease was recognized.

During the entire treatment there were given 500 grains of chloral by mouth and rectum, frequent hypodermatic injections of morphine, and 80 cubic centimetres of antitoxin. None of these remedies had the least effect beyond the occasional hypnotic effect produced by the chloral and morphine.

The abdominal sutures were removed on the second day after the onset of the disease, and the secretions were given to the bacteriologist; so also were the scabs from the abrasions on the back, as well as the scrapings from beneath the nails, and the 6 or 7 ounces of cerebro-spinal fluid that was withdrawn by lumbar puncture, all given to the bacteriologist, with the following result:

No. 1. *Scab from Skin under the Left Scapula.*—The material was rubbed with normal salt solution and the emulsion was injected into mice subcutaneously. *Mouse No. 1:* Weight, 15 grammes. Amount injected, 1.5 cubic centimetres. Time of injection, May 8 at 3 P.M. Result: May 9, very slight scoliosis; May 10, scoliosis marked; May 11, marked scoliosis, and contraction of the left hind leg; spasm; May 12, dead. *Mouse No. 2:* Weight, 13 grammes. Amount injected, 1 cubic centimetre. Injection made May 8, 3 P.M. Result: May 9, possibly slight scoliosis; May 10, scoliosis distinct; May 11, scoliosis marked; May 12, much progressed; May 13, found dead at 11 A.M. Both of these mice died of typical tetanus.

The area of subcutaneous tissue into which, in mouse No. 2, the injection of the emulsion was made, was excised and utilized for cultures. From these cultures a pure growth of tetanus was obtained May 19.

No. 2. *Three Scrapings from Finger Nails.*—These were emulsified with 1.5 cubic centimetres of sterile physiologic salt solution and injected into a mouse designated as *Mouse No. 3.* Weight, 16 grammes. Amount injected subcutaneously, 1.5 cubic centimetres. Time, May 8, 4 P.M. The mouse remained well and showed no signs of tetanus.

No. 3. *Cerebro-spinal Fluid.—Mouse No. 4:* Weight, 12 grammes. Amount of cerebro-spinal fluid injected, 1 cubic centimetre. Time of inoculation, May 9, 9 A.M. The mouse showed no signs of tetanus. *Mouse No. 5:* Weight, 16 grammes. Time of inoculation, May 9, 9 A.M. No result. *Mouse No. 6:* Weight, 14 grammes. Injected 1 cubic centimetre of cerebro-spinal fluid plus 0.1 cubic centimetre of serum from a horse that died of tetanus (0.1 cubic centimetre being the fatal dose of a mouse of that weight). Time of inoculation, May 11, 4 P.M. Result: May 12, possibly slight scoliosis; May 13, appears well; and May 14, seemed to be all right, and did not die.

(Signed) C. FISCH.

CASE II.—Mrs. P., aged 45, mother of several children. History of several attacks of pelvic inflammation. On examination uterine retroversion with fixation was discovered. The previous history of this case was one that clearly demanded surgical interference, and on May 26, after a thorough preparation, the patient was anesthetized and the same operation as in the preceding case was performed. No unusual shock followed the

operation, and the patient did as well as could be expected till June 1, at 4 P.M., when she complained of a soreness about the angle of the jaws, and she became very restless and was unable to sleep. Nausea came on and she was unable to retain nourishment. Slight rigidity about the masseter and trapezius muscles now became apparent. This condition gradually extended down the back and convulsions finally set in, and she died of tetanus June 4, or three days after the first symptoms were manifested. The treatment of this case was about the same as was followed in Case 1, except the intraspinous injection of antitetanic serum and the intravenous transfusion of normal saline solution were not practised.

Summary of Treatment in Both Cases.—Chloral in from 10 to 30 grain doses per rectum was given from every two to four hours; occasionally with this one-fourth to one-half grain of morphine was combined with the chloral; ten cubic centimetres of antitetanic serum hypodermatically every six hours, and one-half per cent solution of carbolic acid hypodermatically. An attempt at reducing the violence of the convulsions was made with inhalations of chloroform, but toward the last the convulsions were so frequent that it was impossible to continue the chloroform without producing chloroform narcosis.

Immediately after the death of Case 2 all of the sutures were removed from the wound. The catgut used in uniting the peritoneum were found to be partially dissolved. The kangaroo tendons used to hold the uterus forward were somewhat macerated. The silkworm gut used for closing the abdominal wound were unaffected by their presence in the tissues. All of these, together with secretions in and about the wound, were given to a very competent bacteriologist for a thorough investigation. Having been impressed with the fact that the cause of infection was present in the suture material, the entire unused stock of suture material that had been purchased some time before, and from which the material used in these cases was taken at random, was turned over to the bacteriologist with instructions that it should also be examined. The result of these examinations is here given.

INVESTIGATIONS INTO THE ORIGIN OF THE TETANUS INFECTION IN MRS. P.'S CASE.

June 2, 1902.—On removing the dressing a large amount of pus was found, which was removed with sterile cotton and pre-

served, as also were the catgut sutures, which were placed in a sterile container and sealed. Upon examination microscopically, a few bacteria were found in the pus, among them bacilli of the size, shape, and staining qualities of tetanus bacilli. Only one spore-forming bacillus could be found. The cotton was soaked in bouillon for twenty-four hours and incubated at 37° C. After this time the fluid was drained off and used for animal injections. The catgut sutures were cut into small pieces and incubated with bouillon in the same way. With the fluids thus obtained the following experiments upon mice were made.

June 3, 1902, 3 P.M.—*Mouse No. 1:* Received subcutaneously 10 cubic centimetres of the pus bouillon (twenty-four hours); died of typical tetanus June 7. *Mouse No. 2:* Subcutaneously 1 cubic centimetre of same material; died of tetanus during the night of June 8. *Mouse No. 3:* Subcutaneously 1 cubic centimetre of the suture bouillon (twenty-four hours); died of tetanus June 9. *Mouse No. 4:* Subcutaneously 0.5 cubic centimetre of the same material as in No. 3; showed no symptoms, except slightest degree of scoliosis on the second day after injection. Cultures from the pus yielded in one tube tetanus bacilli; and on hydrocele-agar typical gonococci could be cultivated.[1]

On June 3 I received from Dr. Sibley the kangaroo tendon by which the uterus had been fixed during the operation. It was treated like the catgut sutures before mentioned.

June 4, 4 P.M.—*Mouse No. 5:* Subcutaneously 1 cubic centimetre of the tendon bouillon; death from typical tetanus June 9. *Mouse No. 6:* Subcutaneously 1 cubic centimetre of the same material as in No. 5; death from tetanus June 11. The examination of the tissues removed at autopsy revealed nothing that could be used for the question under discussion.

EXAMINATION OF THE DIFFERENT KINDS OF SUTURING MATERIAL USED IN MRS. P.'S CASE.

For my experiments Dr. Dorsett and a member of the firm from which the suture material had been obtained put at my disposal samples of the following sutures: (1) sterilized catgut No. 2, two tubes; (2) sterilized catgut No. 1, from the same firm, two tubes; (3) sterilized kangaroo tendon, from the same firm, four tubes.

[1] It will be noticed in the history of this patient that she had had several attacks of inflammatory trouble of the appendages; one, at least, may have been due to the gonococcus, though no direct history was obtained.

This material was utilized in the following way: After sterilizing the outside of the tubes for twenty-four hours by putting them into a 1:500 $HgCl_2$ solution, the tubes were opened and the sutures were extracted with sterile forceps and put into sterile Petri dishes, which were allowed to remain at incubation temperature for some hours. After the evaporation of the alcohol, pieces of varying length were cut out from them (some from ends, and others from middle) and carefully inserted into small incisions in the skin made on guinea-pigs and mice. The wounds of the animals were thoroughly closed with collodion. In some cases the pieces of sutures were dipped into sterile agar and thus introduced. The results obtained were:

I. *Sterilized Catgut, Size No. 2.*—June 8, tube No. 1: No. 1*a*, guinea-pig, 5 centimetres of the gut, no symptoms, no suppuration, animal well June 30; No. 1*b*, mouse, 2 centimetres of the gut, no symptoms, animal well. June 14, tube No. 2: No. 2*a*, guinea-pig, 5 centimetres of the gut, no symptoms, animal well June 30; No. 2*b*, mouse, 2 centimetres of the gut, no symptoms, animal well June 30.

II. *Sterilized Catgut No. 1.*—June 14, tube No. 1: No. 3*a*, guinea-pig, 5 centimetres of the gut, no symptoms, animal well June 30; No. 3*b*, mouse, 2 centimetres of the gut, no symptoms, animal well June 30. June 16, tube No. 2: No. 4*a*, guinea-pig, 5 centimetres of the gut dipped in agar; suppuration, no tetanus; animal died with multiple abscesses.

III. *Sterilized Kangaroo Tendon.*—June 8, tube No. 1: (*a*) guinea-pig, 7 centimetres of the tendon, no symptoms, animal well June 30; (*b*) mouse, 2 centimetres of the gut, same as in (*a*); (*c*) mouse, 2 centimetres, result as in (*a*) and (*b*). June 16, tube No. 2: (*a*) guinea-pig, 5 centimetres of the tendon, first tetanic symptoms June 18, death from tetanus June 21; (*b*) mouse, 2 centimetres of the tendon, scoliosis June 19, death from tetanus June 22. June 20, tube No. 2—this time the pieces were cut from places far distant from those where the material for the experiment of June 16, with the same tube, was taken: (*c*) mouse, 3 centimetres of the tendon, scoliosis June 19, death from tetanus June 22; (*d*) mouse, 1 centimetre of the tendon, no symptoms, well June 30; (*e*) mouse, 1 centimetre of the tendon, death from tetanus June 25; (*f*) mouse, 2 centimetres of the tendon, no symptoms until June 24 slight scoliosis (?) on this day, suppuration at point of injection, tendon expelled from wound June 22, recovery. June 12, tube

No. 3: (*a*) guinea-pig, 5 centimetres of tendon, no symptoms, well June 30; (*b*) mouse, 1 centimetre of the tendon, no symptoms, well June 30; (*c*) mouse, 2 centimetres of the tendon, no symptoms, well June 30. June 16, tube No. 4: (*a*) guinea-pig, 7 centimetres of the tendon dipped in agar, suppuration but no tetanus, tendon expelled on third day; (*b*) mouse, 2 centimetres of the tendon, scoliosis June 19, death from tetanus June 21; (*c*) mouse, 2 centimetres of the tendon, no symptoms, well June 30.

Result.—While the catgut material (Nos. 1 and 2) was found to be sterile, two of the kangaroo tendons examined contained undoubtedly spores of the tetanus bacillus.

(Signed) C. FISCH.

It will be observed that tetanic symptoms were noticed in the first case three days after the operation, and in the second case five days. The period of incubation is by no means a fixed period, as is shown by a careful study of the literature, although most authors claim that it is seven days or longer. Senn, however, claims that in rare instances twenty-four hours only may be required to produce toxic symptoms. In Case 1, so short a time (three days) having elapsed after the operation, and the presence of inflamed area between the scapulæ, pointed to a probable infection from the patient's finger nails prior to the operation, and while in the act of scratching; hence the reason of a bacteriological examination of the scab taken from this point, as well as the examination of the scrapings from beneath the nails. However, after the investigation of the suture material from the unused tubes, which was the same used in both cases, it was shown conclusively that the source of infection lay in the kangaroo tendon. There is no doubt that the fatal result in both cases was due to the tetanus bacillus in the tendon. Tendons from this same stock were used in a number of cases, which were anxiously watched for some weeks afterward, but, as no symptoms of tetanus appeared, the conclusions were that in the other cases, fortunately, sterile tendons were used, and, while some of these tendons were sterile, some certainly contained the tetanus bacilli.

The bacteriological literature of the tetanus bacillus shows that it is anaerobic in nature and is abundant in the soil. This fact demonstrates the cause of its activity in punctured wounds

(caused by infected objects, as "the rusty nail") where there is but little chance for drainage.

In the above reported cases there was no chance for drainage in the closely coaptated abdominal incision, hence the greater chance for general intoxication.

When once the disease has manifested itself, even an early opening of the wound will do no good, as the rigidity of the muscular system is always a clear indication that the intoxication is already general. However, this was not overlooked, and they were opened and cauterized.

Tetanus following abdominal section is rare. H. C. Coe, in the *Gynecological and Obstetrical Journal,* December, 1901, page 500, reports two fatal cases, one following operation for pus tube, and one following operation for cystic ovary and fibroid of the uterus. In one case symptoms developed sixteen days after the operation, and in the other ten days were required before the disease manifested itself. In the *Philadelphia Medical Journal,* February 16, 1901, James B. Bissel reported two fatal cases following laparatomy, in one of which tetanus developed fourteen days after operation, and in the other nine days after operation. The source of infection in these two reports, if found, was not given, nor is there any mention made of the suture material used. Thompson, of Hull (*London Lancet*, June 20, 1900), reports a fatal case following nephropexy. Source here also not given. It appears from the above quotations that the infections in these cases were not ascertained, or were at least obscure. This may have been the reason for not giving the source, but they were certainly operations in which animal ligatures are generally used.

Experiments have shown that tetanus spores are among the most resistant of all germs. They will retain their vitality after three hours' soaking in a solution of 1:1000 bichloride of mercury. A 10 per cent solution of carbolic will not affect them. An exposure of 80° C. has also no effect. An immersion of an animal ligature in a 50 per cent solution of alcohol will not be sufficient for a thorough penetration into the substance of the structure, particularly the kangaroo tendon generally used in surgery, as the alcohol will quickly coagulate the albumen contained in the surface of the ligature, and goes no further. Formol or formalin will not answer, as it so hardens the tendon as to render it unfit for use. Heating by boiling a hermetically sealed tube of kangaroo tendon produces such shrinkage of the

tendon as to render it unfit for use. So it appears that the safest ligature to-day is some material that can be thoroughly boiled immediately before being put to use. So far silk is the only suture we can use in the abdomen with any degree of safety. But the silk, when it can be supplanted in the ligation of stumps by the angiotribe, should be discarded.

Thus far, I have used successfully the angiotribe twenty-five times, as follows: abdominal hysterectomy, ten times; pus tubes, five times; hemorrhoids, once; extrauterine pregnancy, four times; dermoid cyst, once; ovariotomy, three times; and once in a vaginal hysterectomy, and my observations are:

1. Patients upon whom it has been tried suffer less post-operative pain.

2. No adhesions to stumps have followed its application.

3. No secondary hemorrhages have followed its application.

4. It can be applied, when two instruments are used, alternately by the operator and the assistant without the fear that is incident to the slipping of a ligature knot, and in less time.

Why not use it?

DISCUSSION.

Dr. Howard W. Longyear, of Detroit.—This paper introduces an important matter—namely, the necessity for extreme caution in the use of so-called sterilized animal ligatures. We usually have to depend upon some unknown person to sterilize these ligatures for our use, and for this reason I have always felt great hesitancy in accepting them from such sources. In the last ten years I have prepared all of my own ligatures, and have not bought a prepared ligature which was to be buried. I have not buried a single animal ligature that I have not prepared. I rely upon boiling in alcohol in a water-bath, which gives sufficiently high temperature to kill the tetanus bacillus. I have not examined the ligatures to determine that definitely, as no occasion has arisen to suggest it, but as I have had no trouble with my ligatures so prepared, I conclude that the method is correct. The boiling in alcohol may not give a sufficiently high temperature to kill tetanus spores, but the after-treatment, especially the continuous immersion till used, in 20 per cent carbolic acid and olive oil, will doubtless do this.

I have had no trouble with any severe infection following any clean operations, particularly where I have used gloves, but when I have not used gloves I have occasionally seen develop a mild form of infection (staphylococcus), which, I believe, was from my own hands. Since the use of gloves I have not had

this trouble. These prepared ligatures bought in the open market are made up by hired persons, who pass the method on from one individual to another, and in this way there is liability to infection from infected ligatures.

DR. A. GOLDSPOHN, of Chicago.—If the angiotribe would take the place of all ligatures, then, of course, that would be a strong reason for its use. But we all know that it cannot. We must have ligatures, because the angiotribes take the place of ligatures only as far as pedicles are concerned. I would like to ask Dr. Dorsett whether he used the ligature material which is manufactured by the same firm that prepared the different antitoxins which raised such havoc in St. Louis.

DR. DORSETT.—I did not.

DR. GOLDSPOHN.—At any rate, we know the liability to the occurrence of tetanus in our surgery is extremely rare. Such cases would not occur again very soon.

The objections which Dr. Dorsett raised to the use of absorbable ligatures are not well taken, because he does not refer to the proper, potent antiseptic preparation of absorbable ligatures. No one nowadays depends on the use of chemical antiseptics, especially not on alcohol, nor on bichloride of mercury alone. There are other better agents than these, even in the domain of chemical antiseptics. But we do not use chemical antiseptics; we use heat and water moisture combined, not alcohol boiled. Anthrax spores have been boiled in absolute alcohol in an autoclave at a temperature of 212° for an hour, and still they have grown. But this will not occur frequently. Commercial alcohol is not the most destructive form of alcohol. The most germicidal alcohol is that which contains from about 25 to 40 per cent of water, because of the softening, disintegrating effect of the water. Alcohol alone hardens tissue, and antiseptics in it do not penetrate so well. The alcoholic solutions of any antiseptic are inferior to the watery solutions of the same. But this does not apply here. It is heat, together with water moisture, boiling in water, we rely on, and we know nowadays we can boil it long enough to sterilize it. All these absorbable ligatures, when held in tension, can be hardened by formalin, so that they can be boiled to satisfaction.

With reference to the use of the angiotribe, if Dr. Dorsett has used this instrument without any supplementary ligature, and without resultant secondary hemorrhage, he stands alone in his experience, because all men who have used the angiotribe extensively, who have reported their work, and also those I have observed personally, have used supplementary ligatures. They use the angiotribe simply to compress tissue, and then follow it with a ligature; and several of these men have encountered hemorrhage, in my observation of their work in the course of possibly a dozen cases.

DR. WILLIS G. MACDONALD, of Albany.—It seems to me one or two lessons may be drawn from Dr. Dorsett's unfortunate ex-

perience, an experience which might come to any one of us in a different degree at times. They are lessons which are to be learned once for all. The first lesson is that the surgeon is foolish to depend upon any manufacturer anywhere on earth for the sterilization of his surgical material, particularly ligatures. However competent they apparently are, a time comes when their material leads to unfortunate results. I have said on a previous occasion that the worst tribe of staphylococci that ever came to Albany County reached us from Detroit, in the kangaroo tendon which was recommended by Drs. Longyear and Carstens. Some years before a well-known manufacturer's catgut produced for Dr. Vander Veer and myself, in a case of resection of the knee-joint, a fatal case of anthrax.

There is another thing in relation to animal ligatures, particularly the kangaroo tendon and gut of the size larger than so-called No. 3. After several years of experience, I do not believe there is any way that we can effectually and always make it sterile. We have tried the various methods which have been lauded from time to time in the preparation of catgut. We do not use kangaroo tendon. We finally fell back upon the use of the cumol method, carrying out the boiling of the cumol for a longer period than that recommended by Kelly or Clark. We have found the largest strands of Nos. 4 and 5 catgut, at different times, when prepared in the same manner, a variety occasionally which was not absolutely sterile. To avoid this we do not use that size catgut. I obtained a hint from Dr. Price relating to sutures which I regard as one of the most useful lessons in surgery I have ever received, and this was largely in the direction of using fine silk, not the large strands of silk. This is true with relation to all ligatures: the smaller the ligature you can use, the better will your cases do, and I have within the last year used No. 00 silk in cases, applying as many as a hundred and fifty or two hundred ligatures in a wide opening of the tissues, and I have not seen any consequences from it. I cut them off short, and do not take up large masses of tissue in order to tie them nicely.

In regard to the angiotribe, I have done more than one hundred hysterectomies with it, or with the modified instrument of Dr. Newman, of Chicago, and have not had a single unfortunate result. I then did a hysterectomy which promised a favorable result. Subsequently my patient died of secondary hemorrhage. I have not applied it for the absolute control of hemorrhage since. I use it largely to crush tissue, to make small pedicles, which then can be ligated very much better by the use of silk.

Dr. Washington H. Baker, of Philadelphia.—The first gentleman who spoke made the statement that sometimes ligatures were infected, and it just occurred to me that probably there was a factor in the case that I have never seen emphasized to any extent, or, as I remember now, definitely stated, and it is this:

when I was a student in the dissecting room, I was in the habit of washing my hands carefully several times after dissecting, and within fifteen minutes or so afterward my hands were offensive whenever I put them up toward my nose. I realized that I had sterilized my hands practically, or rendered them clean, but there was some place that something came from that made them offensive afterward. Very often I would, a little later, wash my hands again and get them in a better and cleaner condition and yet the same odor remained. Now, it occurs to me that in these operations one may start with sterile tendon, his hands may be practically sterile, but after working the hands vigorously for ten or fifteen minutes a little of the sepsis located deeper in the skin might become dislodged and find its way to the surface, and in this way the previously sterile tendon may become infected. Probably this statement in some of the instances mentioned, where the ligatures appeared to be sterile and afterward unaccountably infected, might be taken into consideration as a possible factor in the infection. It strikes me as being an additional argument for the use of gloves, and their use would not be open to this objection.

DR. CHARLES GREENE CUMSTON, of Boston.—While the remarks that have been made this afternoon in discussing this paper cover the ground pretty well, still there are some points to be considered. Personally, I have never used catgut prepared by the cumol method for buried sutures in the abdominal wall, having always used dry sterilized material, and I can truthfully say that I have never had a case go wrong. Every strand of catgut or kangaroo tendon that I use is either sterilized by myself or by my operating nurse. With the dry method the tendon or catgut is put up in two envelopes, as recommended by Dr. Carstens to this association two or more years ago, and I have always found it most satisfactory.

There is one thing that must be borne in mind, which is that if you wish to properly sterilize animal ligatures by dry heat it should be done for one hour on two successive days at a temperature of 350° F. If I am not mistaken in making this assertion, I believe that this temperature will kill all known bacteria and their spores. I am not quite sure that I am correct on this point, but I believe so.

Silk when perfectly pure is an ideal material in gastro-intestinal work, and for ligatures; but for the last two years I have been using celluloid thread, which is very strong and therefore the finest size can be used, and it is also readily sterilized by boiling, and in my routine work it has entirely taken the place of silk.

DR. WALTER P. MANTON, of Detroit.—This is a vital question to the surgeon. If the animal ligature is to be relegated to the surgical junk-shop, and we must sit around and watch a sterilizer, we might as well give up entirely. Dr. Macdonald advocates the use of silk. Personally, I do not like silk. I learned

its use in Germany, where it was employed twenty-odd years ago almost exclusively. I used it for a number of years and then gave it up. Now, if we drop the animal ligature and silk, that leaves us only the angiotribe. I was the first in Michigan to publish a series of cases in which the angiotribe was used. I used it for about a year, then practically abandoned it. In quite a series of cases I did not have a single instance of secondary hemorrhage, and I used it in both vaginal and abdominal operations. I came to the conclusion, however, that the angiotribe is a dangerous instrument. Like Dr. Macdonald, I felt that I would sometime meet my Waterloo. After I published this series of cases I received several letters from practitioners, one of whom urged me not to use it, stating that in two or three cases they had met with secondary hemorrhage. If the angiotribe is used properly there is not very much danger of this, but I found myself using the instrument and supplementing with ligatures, so finally I abandoned it altogether and use ligatures alone, and I now feel safe regarding the occurrence of secondary hemorrhage.

In the defence of Detroit, I wish to state that the kangaroo tendon which Dr. Macdonald used, and had such disastrous results from, I have employed very extensively. I used hundreds of dollars' worth of that firm's kangaroo tendon, and I have never had serious trouble. Occasionally there was a little suppuration, but not often. When suppuration occurred I generally attributed it to some other cause. I dropped kangaroo tendon, however, and for a number of years have used only catgut as prepared by the method advocated by Dr. Carstens. Last spring, after returning from the meeting of the American Medical Association, and using catgut prepared in this manner at the hospital, I had ten successive cases of suppuration in the abdominal wound. I dropped that catgut immediately, and bought some outside, prepared by one of the manufacturers. Since then I have not had any trouble. In using this, however, I may get a case of tetanus, as Dr. Dorsett did, so that personally I am at a loss to know what I am to do in the future.

DR. DORSETT (closing the discussion).—I am very much obliged to the gentlemen who have discussed my paper, and I am very glad to see that it has created so much interest, because I consider this subject a very vital one. I do not believe we are ready as yet to give up the animal ligature, and I do not believe there is any absolute way of thoroughly antisepticizing animal ligatures.

In regard to alcohol, bacteriologists tell us that absolute alcohol will not penetrate kangaroo tendon as deeply as will a fifty per cent solution. Even then it simply coagulates the albumin on the outside of the ligature and does not penetrate the center. Two or three of these ligatures (kangaroo tendons) were put in a dry sterilizer and they were kept for a short time, about ten minutes I should say, at a temperature of 100° C., and even then

an examination of the tendon showed it had tetanus bacilli in it. This proves that kangaroo tendon cannot be thoroughly antisepticized by dry heat, unless the temperature be kept at 150° or 155° C., and that temperature, it seems to me, would burn up the tendon.

The objection to the angiotribe offered by Dr. Macdonald is a very justifiable one, but we must remember that silk ligatures will slip. Any kind of ligature may slip. The angiotribe is condemned by some by reason of the fact that it takes longer to operate when using it. If we count the minutes when it is applied on one side, and then on the other, the aggregate time is not longer than if we use the ligature carrier, or a needle with a ligature, or any other mode of ligating with silk. By using two angiotribes, one can be put on one side, screwed down, as indicated, the anesthetist keeping the time the instrument is in place, and when three minutes have elapsed it releases that side; in the meantime the other angiotribe is applied while waiting, so that one angiotribe follows the other, one being used by the operator, the other by the assistant. A mistake is made if the operator, being in a hurry, screws down the angiotribe rapidly. If that is done it will crush the tissues; it will almost bite them in two, for the reason that enough time is not consumed in order to permit the fluids in the tissues to recede. If the tissues are crushed in a rapid manner, when thus used of course there is much more danger of hemorrhage. If you bring pressure to bear slowly, in order to allow the fluids to escape from the tissues, there will not be as much danger from hemorrhage in the use of the instrument.

As to catgut ligatures, this paper shows no history of any tetanus, staphylococcus, or streptococcus infection from them, yet I have had a rather disagreeable experience with catgut. I have used catgut prepared by reliable firms which has infected my patients. It is my belief that no matter how careful has been the preparation, now and then infection will occur. The larger the size of the strand, the greater the danger, for the reasons I have given.

SOME PROBLEMS IN EXPLORATORY LAPARATOMY.

By WALTER B. CHASE, M.D.,
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The diversities and uncertainties of physical signs and rational symptoms, as related to certain diseases of the contents of the peritoneal cavity, being insufficient for purposes of diagnosis, surgical intervention may be needful to determine the exact status of affairs.

The problems of exploratory laparatomy are numerous and perplexing. I shall, therefore, in the limitations which time imposes, make no effort to classify them or treat of them in much detail, preferring rather to discuss some of their manifestations and draw certain deductions which may aid the operator in their proper management.

The term exploratory laparatomy expresses doubt in the mind of the surgeon; but the topic is so broad that there must necessarily be much generalization in its discussion. Perhaps the central inquiry concerning this whole matter reduces itself to this one question, viz., How much doubt can exist in the mind of the operator and yet warrant exploratory operation? Or the question may be reversed, viz., "How much of certainty is required to justify the procedure?"

As fundamental to the whole question, the time element, as connected with each case, must be taken into consideration. Is the case chronic or acute? If acute, must immediate operation be done? If chronic, do the conditions admit of delay, so that a period of time may elapse, until symptoms can be studied and some guiding deductions made from the chemical history of the case? Abdominal section, under such conditions, may become more or less an elective operation, in which the judgment of the attendant and the wish of the patient go to make up the decision.

In acute cases no such delay can be justified in determining

the course to be pursued, and my plea is that, if required, it be done early.

Among the cases frequently met with are recurring attacks of partial or complete obstruction of the bowels. The previous histories of many of these cases show obstruction, more or less acute in their manifestations, extending over a period of a few hours to a few days, attended with pain, distention, and perhaps vomiting, which have yielded to treatment, or in which nature unaided seems to have been able to overcome the obstruction. True, many of these symptoms may have been vague, but they are possibly sufficient to make a basis for comparison with present conditions. Here the age, the power of resistance, and the surroundings of the patient must be taken into consideration. If the symptoms are acute, suggesting intussusception, angulation, or if other positive evidences of acute obstruction are present, even though doubt remains as to its exact origin, the decision will brook no delay. If fecal vomiting be present, it must be regarded as a serious complication.

Early laparatomy, to many of these cases, offers the only chance of recovery. By early laparatomy I mean that the operation is undertaken before the strength and vitality of the patient are seriously compromised, in which reasonable hope justifies the procedure. Temporizing, under such circumstances, can find no extenuation. Every gentleman present can recall late operations, frequently unsuccessful, which might have been equally auspicious, had timely effort been made. There are the far-away and near-by patients of other practitioners, whom we have hastened to at the eleventh hour and failed in our efforts for their rescue.

Another class of patients belonging to this same group, but more chronic in development, are usually persons of middle or later life, who complain of ill-defined abdominal distress, failing strength, anemia, with progressive emaciation and more or less constipation, in which no positive symptom or sign is present of malignancy. These are cases in which comparative study of symptoms and variation of physical signs must lead sooner or later to a decision whether operative interference is justifiable.

The difficulties of differentiation between cysts and solid growths of the intrapelvic viscera are frequently present. In fat women with thick abdominal walls it is an easy matter to mistake lipoma of the omentum as an ovarian cyst. So, also, encysted peritoneal fluid incident to chronic tuberculosis of the peri-

toneum has led to similar error. The greater the tension of the cyst the more liable is it to be mistaken for a solid growth. These same difficulties cluster about the absolute diagnosis of many of the neoplasms found within this area.

Again, suspected suppuration is one of the very frequent conditions for which exploratory incision is not only justified but clearly enforces its necessity. The finding of unsuspected pus accumulation, in laparatomies for other well-defined pathologic conditions, only serves to give emphasis to its possibility in doubtful cases. These suppurative processes are only too common in appendicitis and infective inflammations in that locality, not infrequently involving the tubes and ovaries. The number of leucocytes is found to have a most important significance in settling the diagnosis. Regard, however, must be had to the physiological causes which lead to leucocytosis, particularly that of pregnancy, the period of active digestion, and certain stages of childhood development. So also must discrimination be made in the diseases in which pathologic leucocytoses do or do not exist. If more than a certain number of leucocytes are found to the cubic millimetre of blood, their value for diagnostic purposes becomes evident. These are aids which should not be ignored or disregarded. Their timely recognition lends new dignity to their value as guides to otherwise doubtful questions. The local causes which lead to suppuration within the peritoneal cavity are varied and often difficult of detection without the aid of direct touch or sight. These cases convey to the observer strong impressions both as to their origin and location; but after the most careful scrutiny which study and experience prescribes, these factors which make up their history remain unsolved problems until exploration reveals the true status of the case.

The wide variation of disease processes involving the liver, its ducts, and bladder opens up a large field of inquiry. In emaciated patients their study and differentiation may be comparatively easy. In proportion to the thickness of the abdominal wall the diagnosis becomes more uncertain. Particularly is this true in distinguishing between disease of these organs, and involvement of other contiguous organs, the stomach, pancreas, the omentum, and the mesenteric glands, and frequently but one sure method of diagnosis is left for our guidance. In the department of renal disorders laparatomy has taught most salutary lessons.

Operations for supposed renal calculus in which chronic in-

flammatory changes were responsible for the ailment, have resulted in such amelioration of nephritis as to establish their utility as remedial measures. Thus, errors in diagnosis have served as new guides to conservative surgery. Just what the limitations for its employment will be as yet remains an open question.

The removal or splitting up of the capsule of the kidney, whereby the organ, by resulting adhesions, receives new blood supply in chronic nephritis, opens up an entirely new field for cultivation and reflects credit on its discoverers.

The pelvic cavity has its own peculiar difficulties. Close observation, long experience, and diagnostic acumen will fathom and decide many vexed questions, but they are inadequate for all. Neoplasms, hemorrhages, exudates and adhesions, displacements, the complications growing out of normally and abnormally located conceptions, all have their doubts and uncertainties, until we are sometimes brought face to face with the question whether our ignorance does not overmatch our positive knowledge. The infections and their complications following miscarriage and pregnancy are questions of momentous interest, which clamor for definite solution. These are only a few of the questions which demand certainty of knowledge and, it may be, prompt intervention.

Exploratory abdominal section for diagnostic purposes is of comparatively recent date. Its growth has been progressive, but its limitations as yet are but partially formulated. Training and skill in diagnosis, judgment having in it a blending of soberness and daring, coupled with long years of apprenticeship, will guide to safe conclusions.

In chronic cases there may be ample time for study and analysis, with comparison of the progress and fluctuation of symptoms, which will furnish valuable data for forming deliberate judgment.

These are not the fields best cultured and gleaned by the novice, or by the practitioner who from necessity or choice includes in his studies the entire field of practical medicine. These are problems which require both the physician and the surgeon for their practical solution.

How frequently it happens that the attending physician, in his mistaken solicitude to save the patient from an operation, has allowed to pass the favorable opportunity when conservative surgical intervention to demonstrate the exact nature of the malady

might have saved the patient! I say "conservative surgical procedure," for I hold radicalism in such extremities is the truest conservatism.

It would be an interesting fact, were it possible of determination, to know what percentage of laparatomies that were done for supposed specific disease were caused by other conditions. It would doubtless prove that mistaken diagnoses were far more frequent than the profession generally supposes.

If we appeal to our own mistakes—and who has not made them?—will it not tend to confirm the supposition? When we take into consideration the uncertainty that follows our supposed certainty, the grounds for exploration need less argument and defence.

Another problem may justly claim our attention. Is the operator capable of modifying his diagnosis at every step of the operation, and resourceful enough to meet unexpected conditions? Its answer bears a close relation to the fitness of the operator for the work undertaken.

But the sphere of laparatomy is enlarging and new questions have arisen regarding its legitimate scope. There is a class of diseases, heretofore considered to be wholly within the domain of the physician, which have been termed "borderland cases," which have not responded to medical treatment. Shall some of these be subjected to the test of exploratory procedure, that knowledge may be obtained whether they are not after all better managed by surgical than by medical treatment? Park and Fritz have given these matters much consideration, and their views, as representing a new departure, are interesting and instructive.

There is one other question to which I desire briefly to allude in closing, and it bears a similar relation to other capital operations as to exploratory laparatomy—*i.e.*, the attitude of the public to surgical work. It cannot be questioned that surgical interference is looked upon much more favorably by a discriminating public than formerly. The prejudice against the scalpel and the hospital, is less aggressive than formerly, so that the suggestion by the surgeon that an operation is required, and the hospitals offer the best facilities for it, finds a more ready response by the patient or the patient's friends. While this is true, prejudice remains, and an impression lives, that many operations are done as much to gratify the wish of the surgeon as to cure or save the patient's life. This is an evil hard to overcome—difficult because there are unfortunately surgeons who possess so little re-

gard for conscience and the sanctity of human life. A bold operator remarked to me some time since that he would not like to have any man's hand put in his peritoneal cavity—the thing he was doing for other people constantly. It must be admitted that these considerations operate to discount, in some degree, the work of every conscientious operator.

There is, however, a duty the surgeon owes to the public which has in too many instances been neglected. It is this: to make it clear to the patient or the patient's friends, and thus to the public, that there is such a limitation to our knowledge that we are perforce required to explore for causes. A frank confession of this truth will, with right-thinking people, strengthen the position of the operator. In fact, had such an open statement been made in many cases, the reputation of not a few men would have been saved and the profession as a whole would to-day occupy a stronger position.

One other consideration: there is a widespread belief among the laity, not founded in fact, for which the profession is largely responsible—viz., that deaths following laparatomies, and other major operations as well, are due to the operation *per se* and not due to the causes for which the operation was undertaken. The sooner these false beliefs are eradicated the better it will be both for the profession and the public. The duty of correction of this erroneous sentiment lies with the medical profession.

DISCUSSION.

Dr. A. Goldspohn, of Chicago.—In abdominal surgery outside of the female pelvis, instances undoubtedly will always be rather frequent where exploratory abdominal section is necessary, where a diagnosis, even approximately, cannot be made. Neoplasms of the pancreas, the liver, the bile ducts, the gall-bladder, kidneys, some anomalous conditions about the stomach, and mechanical ileus will leave us in such a degree of doubt as to make an exploratory abdominal section the proper thing not infrequently. But I must contend for the female pelvis that an exploratory abdominal section is not often necessary. I trust that I may not give offence when I say that I believe that a large proportion of men who operate in the female pelvis do not qualify themselves properly in bimanual palpation, and they do not attempt to make sufficiently approximate diagnoses. My standard in regard to gynecology is this; that we need to practise bimanual palpation to become even approximate normal work-

ers as gynecologists, just as much as we would have to practise on the piano, not to become experts, but ordinary players on that instrument, and we have no right to begin gynecological work until we have thoroughly schooled our fingers and drilled ourselves in this pelvic physical diagnosis. If we practise vagino-abdominal and recto-vagino-abdominal palpation as we should, and as we can, particularly if we limit ourselves to the female pelvis, we can acquire that degree of ability to exclude such errors as opening the abdomen of pregnant women when there are no complications.

As a rule, before giving her consent to an operation and removal of something from her pelvis, the patient can justly demand to know of me whether she will probably have a uterus after I got through operating, or not, or whether she will menstruate or not. These are things of such great importance in the destiny of a woman, and mean so much to her social life and otherwise, that it becomes a reasonable demand. And it is possible for us, if we are competent gynecologists, to answer that question, at least approximately as a rule. The idea, which is advocated mostly in Philadelphia, of going into the abdomen for everything, even the diagnosis, I must object to. And there is a class of cases that can be properly and thoroughly attended to by the vaginal route, and the proper choice between these routes demands again the application of a laudable degree of skill in diagnosis.

Dr. Chase (closing the discussion).—The standard which Dr. Goldspohn has set is a fine one, and one to which I think all of us desire to attain. There is certainly less difficulty in becoming well satisfied with one's own mind as to the degree of certainty whether or not there is or is not disease in the pelvic cavity. When abdominal palpation is practised under favorable conditions, perhaps with the patient anesthetized, especially in a woman with a lean abdomen, diagnosis may be made; but thick abdominal walls, with a large amount of exudate, the neoplasms glued together by adhesions, I must confess that I have in certain instances not been able to make a diagnosis which was satisfactory to myself. In those cases, if one is in doubt, it is better to make a frank statement to the patient, and proceed. If we are correct, very well; if we have made a mistake, we can correct the diagnosis after having opened the peritoneal cavity.

GENERAL CONSIDERATION OF DRAINAGE IN ABDOMINAL AND PELVIC SURGERY.

By JOSEPH PRICE, M.D.,
PHILADELPHIA.

The great Keith said in one of his last valuable productions: "After all, where would we be without drainage?" We have been playing battledore and shuttlecock with drainage for many years, very few of us having practised it with unvarying confidence from the beginning of our trying and painful experience in pelvic surgery. Early in the history of ovariotomy, in the hands of about all the ovariotomists, while using the clamp and pins for closure of the incision with harelip sutures, the method was so crude that it favored drainage in a good number of cases. In the ligature method the ligatures were large and numerous and were drained through the lower angle of the incision. The more progressive and successful specialist, doing painstaking operations in every detail, where filth and complications or adhesions were found to exist, practised most extensive sponge packing or operative drainage. The modern operator does the same operative drainage by his gauze pack or the dry operation. The same operator, in many instances, also uses gauze, or some form of tubular drainage, both local and general, and his results are so good, his mortality so low, that it would be difficult for him to tell you just why he attains such results. The English and Continental operators of prominence, with long series of operations with low or *nil* mortality, have all practised one or more methods of drainage; they have all recognized that, aside from the pleasing primary results, they have minimized post-operative complications. About all the repeated operations are coming from operators in hospitals opposing drainage or practising it only when they are compelled to; and it is curious that these same men favor drainage when they abandon procedures or practise incomplete ones. You find they commonly say, "I stopped and put in a drain." Such an

apology always reminds me of men who puncture or stab, thrust in a drain, and run.

My confidence in drainage has always been progressive. I fortunately recognized the value of it early in my experience; my work was then, and is now, largely for suppurative forms of pelvic diseases, and the results are so good in a class of cases many of whom would have died without it, that I have never regretted its use. As the operative field was extended and broadened, drains were placed in the renal regions after a variety of operations there, as well as in the pelvic region after extensive and heroic operations in that cavity. I always felt like thanking the drain for the very valuable assistance and support it was giving me in what was commonly called bold or aggressive surgery, as surely without the drain my hands would have been tied.

A large number of operators, doing fairly good work by the suprapubic route, condemned or partially rejected drainage. Some of them never learned, and never will learn, how to handle drainage well. Some of them will unfortunately die without knowing how to drain. After abandoning the suprapubic route, they were placed in the uncomfortable position of admitting that drainage was doing what they had refused to do by suprapubic surgery.

The operators doing suprapubic surgery in pelvic suppurations and in all forms of appendicitis must possess thirty-three vertebræ. It is hard and complicated work; it requires and demands prolonged apprenticeship, as the surgery is extensive, the toilet important, and drainage always vital. You can save about everything with drainage, and your mortality will be large without it. Nothing has pleased me more in the last few years than the knowledge of the fact that the young school of surgeons in about every instance are using drainage with great success and skill, in spite of the fact that they have been under the instruction of that class of men about the country and in the hospitals condemning it. Only recently a brilliant young surgeon connected with the Bryn Mawr Hospital opened two bad subjects in two places, made a careful toilet, and drained, saving both cases. The first was done for a gangrenous appendix and general peritonitis, the second for a lacerated spleen. He put a gauze overcoat about the mutilated spleen. One of his colleagues, about the same time, drained a lacerated kidney and saved his patient.

RUPTURED PUS TUBES.

By CHARLES GREENE CUMSTON, M.D.,
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Of all the chronic diseases of the genital organs of woman which are a decided impairment to the joys of life are certainly inflammatory diseases of the tubes and ovaries. These patients form that large class, which it is our lot to meet daily, of the so-called "sickly woman," because hardly has the pain and discomfort within the pelvis abated by rest in bed when, shortly after the patient is up and about, they again appear. All this readily explains why these affections of the ovaries and tubes produce so much evil and distress in women occupying all social ranks of life.

In this paper only the infectious diseases of the tubes will be considered. They may arise from pyogenic germs carried directly to the tubes by the blood or lymph, or the process may be a direct extension from the diseased endometrium and infected uterus. This, briefly, is the manner in which pyosalpinx originates.

One of the most serious complications of pyosalpinx is perforation into the surrounding hollow viscera such as the bladder, rectum or vagina, or a direct perforation through the abdominal walls. The symptoms of a perforated pus tube are quite characteristic, the principal one being a continuous secretion of pus from the fistula. In these cases there exists the danger that the patient will be reduced to such a state of weakness by the continued loss of albumin and the absorption of septic products, that the important organs will suffer and undergo amyloid degeneration.

If the opening of the perforation is quite small so that by pressure on the tube the pus will only escape slowly, it will eventually happen that if the patient should fall or if much pressure is exerted over the suppurating focus, the pyosalpinx

will burst and the purulent fluid will escape into the general peritoneal cavity, and this possible rupture of a salpingitis is a constant menace to the life of the patient.

It is really astonishing how even at the present time certain surgeons and practitioners still treat these cases with palliative measures, while all of them will be decidedly in favor of operating if they are dealing with a perforated pus tube. In going over the literature for the last few years I have been able to find the reports of a number of operations undertaken in cases of perforated pyosalpinx, and a consideration of these will perhaps give the best idea of the modern treatment of this unfortunate condition.

In 1889, Veit published an excellent paper on perforation of pyosalpinx occurring into the vagina or through the abdominal wall, and reports four cases. With regard to these he makes the following observations: If the tube can be successfully drained the increase of the trouble is certainly prevented, but a permanent cure never results. He does not believe that an absolute cure is impossible by drainage, but he considers it as highly improbable. He also attaches but little value to curetment of the tubal mucosa, and the use of iodoform.

Veit considers that perforation of a pus tube into the vagina or through the abdominal wall is a decided contraindication for a radical operation, because the danger of infecting the abdominal cavity is very great, for the reason that before incising the abdominal walls the purulent pocket cannot be satisfactorily disinfected. These cases must be treated by drainage, and according to this authority a closure of the fistula is possible, so that a gradual atrophy of the tubal mucosa will occur. But nevertheless the tumor must be watched closely and removed by laparatomy should it increase in size.

Winter, in his paper, agreed in almost all points with Veit, and considers that perforation of a pyosalpinx into the vagina, rectum, or bladder, is one of the most severe complications on account of the continuous suppuration. A spontaneous cure he considers improbable, and believes that it is more than questionable whether by means of curetment and other applications the pocket can be made to heal. A new abscess can be formed at any time in one of the diverticulums of the tube, which might be overlooked during curetment, and the treatment by incision and drainage according to his experience rarely results in a cure.

He considers extirpation of a perforated pyosalpinx as a

rather risky proceeding, because an infection of the abdominal cavity from the septic contents of the tube is practically unavoidable. He then reports three cases of his own and makes the following observations: The principal danger in the extirpation of a perforated pyosalpinx is the chance of infecting the abdominal cavity. The pus of a perforated pyosalpinx is much more virulent than that of a common pyosalpinx, because the pus of the former has become invaded by large numbers of saprophytes coming from the opening in the neighboring organs, while in the pus of a non-perforated pus tube there are either no living organisms or only gonococci, which are less dangerous for the peritoneum.

He believes that it is advisable to draw off the pus from the tube and then wash the sac out with carbolic acid.

Another danger is opening the hollow viscus into which the pyosalpinx has perforated. In four cases published, the opening of the perforation into the organ could not be found, and this is very often the case, because on account of its minute size it is difficult to discover. Since, then, it cannot be found and closed, the opening will remain an entrance for bacteria until it closes up. As a general rule a pyosalpinx is tightly bound to the surrounding pelvic organs and the walls of the latter are usually very friable from the extension of the infectious process, and consequently the surgeon must proceed with great caution in order to avoid enlarging the opening of the perforation by tearing. Contrary to the opinion of Martin, Winter considers the Trendelenburg position as most suitable when operating on these patients.

Veit has recorded two cases of perforated pyosalpinx. In the first another operator had closed the abdominal cavity after removing one pus tube, and then a pyosalpinx, which afterward developed on the other side, had opened into the vagina. As no satisfactory results could be brought about, Veit did a laparatomy and removed the tube, with a successful result. In the second case the tube had perforated into the rectum and laparatomy followed by removal of the sac resulted in a cure, but six months later the patient died of tuberculosis. Veit agrees with Winter that the Trendelenburg position is by far the best when operating for a perforated pyosalpinx. The danger, of course, in the elevated position of the pelvis is that pus may be spread over the peritoneal cavity, but he believes this is largely theoretic, because if the field of operation is controlled by the eye of the

operator, infection from the pus can be avoided, since it is possible to free the pyosalpinx as far down as the point where it is perforated, and then immediately remove it intact after cutting it off at the point of adhesion with the organ.

Mackenrodt has reported the following case:

The patient was 25 years old, and two years before had a postpartum hemorrhage accompanied by fever. Six months later the temperature again went up, with pains in the abdomen and symptoms of peritonitis, all of which subsided for the time being under a suitable treatment. A recurrence, however, soon took place, and it was then found that a tumor could be made out on the left-hand side, and on account of the urgent symptoms it was opened through the vagina. A large amount of pus was discharged, the pain subsided, and the patient was soon discharged from the hospital. The discharge of pus from the vagina continued, however, and although the patient felt fairly well she was unable to work and finally became weaker. The discharge of pus from the vagina had stopped, and when this took place the temperature went up and severe pains in the abdomen and rectum were present. Local treatment was unsuccessful, and on account of the septic conditions it was decided to operate. Under ether the cicatricial remains of the fistulous duct were found and this was again opened, giving rise to a profuse discharge of pus, and after the abscess had improved laparatomy was done. A slightly adherent pyosalpinx on the right was removed, and then the left adnexa, which plunged down deeply in the cul-de-sac of Douglas, everywhere closely adherent to the intestines, was freed and the tumor, consisting of the tube and ovary, was removed. In order to close the vaginal fistula the anterior and posterior walls of Douglas's cul-de-sac were brought together by suture. Recovery was uneventful; the patient gained in weight and is now perfectly well.

There are two methods of dealing with pus tubes, the first one of which is posterior colpotomy, followed by incision and drainage of the sac, while the second is to remove the tube, and if the condition is bilateral to do a total hysterectomy. Naturally, the easiest and least dangerous method is drainage of the perforated pyosalpinx through the vagina. The vagina is incised and then the pyosalpinx and the walls of the pus tube may be united to the vaginal wall by means of forceps, which are allowed to remain in place for one or two days until union has been effected. In doing this operation in two stages the vaginal walls are first

incised and the sac is united to the borders of the vaginal incision, and after union has taken place the pus tube is opened. In both instances the cavity should be thoroughly irrigated with a salt solution and large drainage tubes employed.

Landau says that by this method he has had very good results in cases in which the tube formed only one pocket; but, in my opinion, a successful issue by the vaginal route is most uncertain, even if proper drainage can be secured. Curetment of the cavity rarely produces a complete destruction of the mucosa of the tube and the cessation of pus formation, and besides, I believe that there is great danger of perforating the walls of the abscess and directly entering the general peritoneal cavity.

While drainage is going on successfully and the patient appears to be making a good recovery, she may for all that be having a new abscess developing in some other part of the tube, and in the end a radical operation will become obligatory. In my opinion the vaginal route—that is to say, posterior colpotomy—is indicated only when we wish to empty a large abscess preparatory to doing a radical operation, and under these circumstances it is certainly of use, because by the removal of the pus the septic condition of the patient will be greatly ameliorated, and she can better withstand the shock of a capital operation.

There is one thing relating to colpotomy that I would particularly refer to, and that is the possibility of cutting a large artery when incising the pus tube. The resulting hemorrhage is very serious and most difficult to control, and can probably be stopped only by clamping or packing the cavity tightly with gauze.

I think, however, the proper treatment for perforated pus tubes is by abdominal incision, whether perforation has taken place into the general peritoneal cavity or into the intestine, bladder, or vagina. After the abdomen has been opened the tube or tubes should be freed from the adhesions binding it to the bladder, intestines, or vagina, and should then be removed. This dissection must be carried out with great care, because the organs to which the pyosalpinx adheres are in a very friable condition from the direct extension of the inflammatory process. When removing the pocket at the point where it has perforated into a hollow viscus, it is better practice, I believe, to allow a piece of the wall of the tube to remain where the supposed perforation opening exists, because if an attempt is made to peel it off completely there is great danger of tearing into the organ, and to close a

large rent is sometimes practically impossible and at the best is very difficult.

If the perforation is very small, as it usually is, whether it be in the bladder, rectum, or vagina, it should be closed, but in most cases when the opening leads into the rectum it cannot be found, but it would appear that this will usually take care of itself and rapidly close by adhesions.

Until it has closed, however, it is an entrance for new infection into the peritoneal cavity, although in one case of my own in which a large pyosalpinx had been discharging through the rectum for several months, and at operation a rent in the wall of the rectum was made to the extent of 3 or 4 centimetres, the patient passing all feces through the drainage tube in the abdominal wall for over ten days, the opening into the rectum took care of itself so well that without any further surgical interference the fistula closed entirely at the end of two months. It is now eight months since this operation was done, and the patient is perfectly well.

Many surgeons aspirate the sac after the abdomen is opened in order to remove the pus and thus avoid the danger of contaminating the general peritoneal cavity, but it has always appeared to me that this is a useless preliminary and that if care is taken in walling off the peritoneum with gauze and removing all pus that has leaked out by dry sponging, never by irrigation, that the ultimate outcome of the case will be perfectly satisfactory. There is no doubt but that the Trendelenburg position is the best and renders the operation much easier, and there is no contraindication to its use in the removal of pus tubes provided that the surgeon will take care to protect thoroughly the general peritoneal cavity by carefully packing with gauze sponges.

The extirpation of perforated pyosalpinx is particularly urgent in those cases in which drainage by posterior colpotomy has been unsuccessful, and also when we are dealing with a tuberculous lesion of the tubes. Also if from the inflammatory changes arising in the pelvis from a perforated pyosalpinx, chronic pelvic troubles such as ileus arise, laparatomy is immediately indicated.

The prognosis, after a perforated pyosalpinx has been removed by laparatomy, is apt to be fairly good, and the patients usually recover, but it must not be forgotten that by abdominal incision we cannot always be successful, because in many instances the tubes and intestines have become so intimately united

that the adnexa cannot be removed entire; and besides that, throughout this large mass will be found multiple abscess pockets, and in such cases I believe that drainage by posterior colpotomy or combined abdominal and vaginal drainage is the proper course to pursue until the condition can be somewhat improved by this means.

I am not greatly in favor of vaginal hysterectomy in cases of perforated pus tubes, although I believe that when the sac has burst into the bladder the vaginal route might be indicated under certain circumstances. Vaginal hysterectomy I believe is indicated in those cases in which the pus pocket cannot be reached on account of the dense adhesions. It is especially indicated in those cases in which after laparatomy an abdominal fistula remains leading down to the stump formed by the removed adnexa, which discharges continuously a large amount of pus and weakens the patient.

CASE I.—The patient, aged 35, was the mother of three healthy children. She has complained of pain in the left iliac fossa and rectum for the past two years. On several occasions large quantities of pus have been passed per rectum and the history of several attacks of localized pelvic peritonitis was elicited.

Three weeks before seeing the patient she had had a miscarriage at about the third month for no known cause. For ten days after this all went well and then the temperature rose to about 38.5° C. and the abdomen became distended. The bowels were constipated, but the patient did not complain of much pain in the abdomen.

This condition remained the same for the next eleven days, when I was asked to see the patient by Dr. Henry Hartung. Examination showed a large mass occupying the left iliac fossa, which was not very painful by bimanual examination, but by pressure a certain amount of pus was made to ooze into the rectum. The abdomen was greatly distended and tympanism existed everywhere.

The patient presented the typical picture of a septic peritonitis of a subacute form. The face was sunken and pinched, the tongue dry and brown. The temperature, however, was normal and the pulse 120.

The patient was removed to the hospital and I opened the abdomen the next day. The intestinal coils were highly hyperemic and covered with flakes of recent lymph. By long and

tedious dissection I was able to free the left tube, which was about the size of a lemon, dipping down into Douglas's cul-de-sac and firmly adherent to the sigmoid flexure. As I was peeling down I came to a small pus pocket outside of the tube and by careful examination I found that the latter had ruptured, and had probably been the cause of the generalized infection of the peritoneal cavity.

I did not attempt to peel off the tube at the point where it adhered to the sigmoid flexure, because I presumed that at this point the opening into the gut had occurred, so I merely tied the tip of the tube and cut it off.

The course of events was most unsatisfactory. There was not much discharge through the large tubes which I had inserted into Douglas's cul-de-sac, but the bowels became more and more distended and no means that we resorted to would produce the escape of gas or cause a movement to be obtained.

Three days after the laparatomy I decided as a last resort to do a right inguinal colotomy. This resulted in allowing the escape of about three pints of fetid liquid feces, but the patient did not rally and died 16 hours later.

Here is a case of an old pyosalpinx which a year or two previously had perforated into the rectum and then, after the miscarriage, it had again lighted up and had burst into the general peritoneal cavity, giving rise to a general peritonitis which was beyond all reach of surgical aid. I would also remark that had I appreciated the real condition of affairs within the abdomen I would not have operated in this case, for I believe that such instances are far better left alone, but on account of the history and the temperature I thought that interference was justifiable.

CASE II.—The patient, 30 years old, was a nullipara. She gave a history of pain in the left iliac fossa and an occasional discharge of pus and blood per rectum. Also she had several attacks of pelvic peritonitis during the last three years.

When seen in another attack the patient was found in a septic condition with a dry tongue, a temperature of 103°, and a pulse of 115. The abdomen was not distended. A large mass, which could be distinctly mapped out from the uterus, filled the left iliac fossa, and fluctuation could be distinctly felt.

The next day I opened the abdomen and, after a careful and long dissection, freed the left tube, which was about the size of a large orange. It was intimately adherent to the sigmoid flexure, which in turn was bound down by adhesions. Carefully

proceeding at this point to free the tumor, I suddenly felt the tissue slip under my finger and found a rent in the gut about 3 centimetres in length; the tube and ovary were then tied off and removed.

I next turned my attention to the opening in the sigmoid flexure, but the organ was so bound down that it was evident I would be obliged to stitch the rent with the gut down in the pelvis. This I proceeded to do, but on account of the inflammatory softening of its walls each Lembert suture which was put in tore through when it was being tied, thus making matters still worse, and I finally concluded that I would drain.

Two large glass tubes were inserted, and for a week the patient passed all her feces through the abdomen. Her condition, however, improved wonderfully after the operation. Her temperature fell to normal and her pulse never went above 95. The appetite was good, and in order to prevent the formation of liquid feces, the patient was fed on a full house diet.

The drainage tubes were removed at the end of a week, and for the next fortnight the patient passed feces through the abdominal wound, but, little by little, less and less were voided by the abdominal opening, and more and more were expelled by rectum. To make a long story short, without any particular treatment the abdominal fistula finally closed in less than three months, the patient made a perfect recovery and has remained well ever since.

CASE III.—The patient, aged 34, was married. She had two normal labors, the last five years ago. First menses occurred at 14 years. She was always regular. While riding a bicycle 18 months ago she fell, the machine striking her in the abdomen. The accident occurred during her menses, which at once stopped, and severe pains were complained of in the pelvis for several days. From this time on at each catamenia the pains were very severe, so that the patient was obliged to remain in bed for ten or twelve days.

About 10 months after the accident the pain during the menses was accompanied by tympanites and a temperature of 39° C., with a pulse of 120. Since this severe attack any exertion or exercise causes much pain in the pelvis, but at this time, as nothing abnormal could be discovered by bimanual palpation, medical treatment simply was instituted.

The patient was seen again six months after the severe attack already alluded to, and it was found that she had been confined

to her bed for three weeks with pains in the abdomen, which at first were chiefly marked on the left side, but later had extended over into the right iliac fossa. The patient says that she had noticed pus in the feces on several occasions. There was also pain on micturition. Her general condition was fairly good and the appetite and sleep were undisturbed.

By bimanual examination an enlarged, heavy uterus was found, and a tumor, the size of an orange, in the right iliac fossa. It appeared to be pedunculated, as it was somewhat movable and seemed to adhere, more or less, to the anterior aspect of the uterus. It did not appear to have any connection with the rectum. On the left a smaller, slightly movable tumor could be felt, which had apparently prolapsed into Douglas's cul-de-sac.

Upon opening the abdomen several days later two cystic growths, which were bound together on the posterior aspect of the uterus, were discovered. The bladder was adherent, especially to the right growth, and this was freed by blunt dissection. The coils of the small intestine were very adherent to the tumors, and required great care in peeling them off. Several nicks were made in the serous membrane of the gut during this dissection, requiring a few Lembert sutures.

After the growths were finally freed they were ligated and removed along with the tubes, which were highly vascular, but appeared in no other way abnormal. The left cyst was extremely adherent to the sigmoid flexure, and had apparently discharged its contents into the gut from time to time, but when it was separated from the large intestine no evidence of an opening into the latter could be discovered. A drainage tube was inserted down into Douglas's cul-de-sac and was left in place twenty-four hours, after which it was removed, as there was no evidence of any leakage taking place from the gut.

The patient continued well until the tenth day, when the temperature suddenly went to 40° C. By bimanual palpation a large diffused mass was found in the pelvis, and I decided to remove the uterus by vaginal hysterectomy. This was done on the next day with some difficulty, on account of the dense adhesions, and about 300 c.c. of thick creamy pus was evacuated. The cavity was packed with iodoform gauze, and from this time on recovery was uneventful.

I now come to my fourth and last case of ruptured suppurating salpingitis. In this instance the abscess burst into the bladder, and after a short report of this case, I desire to direct your

attention to a few remarks on the treatment of rupture of pus tubes into the urinary reservoir.

CASE IV.—The patient was a young woman, aged 28, who gave a distinct history of a gonorrheal infection of the uterus and adnexa some two years before I saw her, since which time she has had several attacks of localized pelvic peritonitis.

When I saw the young woman, in consultation with her family physician, I found a large fluctuating mass on the right side. I advised operation as urgently indicated, but this was refused by the family.

One week later I was hurriedly sent for, and found the patient in a wretched condition from pain in the bladder and frequent micturition. The urine contained pus in large amounts, and by palpation it seemed as if the tumor in the right iliac fossa had decreased considerably in size.

On the next morning I opened the abdomen in the median line and removed a pus tube the size of my closed fist which intimately adhered to the bladder. In dissecting it off from this viscus, it was found to have perforated through the organ, the opening being about the size of a 10-cent piece.

The opening into the bladder was freshened, and it was closed according to the method that I have described in my paper on "Injuries to the Bladder During Abdominal and Vaginal Hysterectomy," which was published in the *Boston Medical and Surgical Journal* for November 21, 1901.

The abdominal wound was closed, excepting the lower angle, through which gauze wicking was inserted for drainage, and the bladder was drained by a permanent catheter. As no leaking took place, the gauze drain was removed on the third day, while the permanent catheter was removed on the fifth, the patient making a slow but excellent recovery.

I believe that spontaneous perforation into the bladder of a pelvic suppuration is far more frequent than has generally been admitted, and I also am of the conviction that these collections of pus which open into the bladder are not cases of abscess on the road to cure, but, on the contrary, are those types of aggravated abscess which in most instances end in the death of the patient, if they are not treated in time by surgical measures.

To my way of thinking there are but two methods for the treatment of pelvic collections which have opened into the bladder. These methods are laparatomy followed by either suture of the bladder or by drainage without suture, or by anterior or

posterior colpotomy with drainage. Of vaginal hysterectomy for pus in the pelvis complicated by a vesical fistula, I can only say that it appears to me an irrational procedure.

In simple cases, such as the one here reported, I would say that laparatomy with suture of the bladder, or simple drainage of the abdomen, will without any doubt give perfect results. After the abdomen is opened the purulent pocket is freed from its adhesions and removed. An attempt may be made to close the opening in the bladder, which, if too difficult, may be left alone and simple drainage through the abdominal incision established.

But now if we consider those complicated cases in which the bladder has been perforated, we are not dealing with an easy problem, because under these circumstances the removal of the abscess is practically impossible and should not be attempted, for should this be done the opening into the bladder may be made much larger, and consequently its closure will be rendered extremely difficult.

It is well, then, in these cases in which everything in the small pelvis is involved in the suppurative process, simply to drain the abscess cavity freely. If the pocket can be drawn up to the abdominal incision it may be held there by several sutures, but if this cannot be done when the general peritoneal cavity is not completely walled off from the collection, I think that we should resort to drainage both through the abdomen and through the vagina.

The number of cases of pelvic abscess which have perforated into the bladder, and in which recovery has followed simple abdominal drainage or combined abdomino-vaginal drainage, proves beyond a doubt that in many instances this method is quite sufficient to bring about closure of a tubo-vesical fistula. On the other hand, we all know that laparatomy is not always successful in these cases, and in spite of both abdominal and vaginal drainage the abscess has persisted, and the tubo-vesical fistula not closing has allowed the entrance of pus into the bladder and finally the unfortunate patients have died.

For that matter, unless the fistula in the bladder can be sutured, it takes a very long time to obtain a cure of this condition in most instances, and although the vesical perforation may close up quite rapidly after abdominal drainage has been effected, the abdominal fistula in most cases will close only after several months or even longer. Sometimes it may happen that this

small fistula will persist indefinitely, and although out of danger to the patient, is nevertheless far from being agreeable.

There is one type of pelvic suppuration which very frequently discharges into the bladder, and in which I believe abdominal incision is always indicated, and that is septic infection of dermoid cysts. By abdominal incision it is usually an easy matter to free them from their adhesions and remove the growth, and at the same time close the perforation into the bladder. But under these circumstances, before closing the viscus, the interior should be thoroughly explored, because it often contains the débris which forms the contents of these neoformations, and which, if left in the bladder, would give rise to the formation of calculi or other disturbances.

I believe that at the present time we are no longer obliged to adopt a single method, and that the operative procedure should vary according to the given case. It is quite certain that a certain class of pelvic suppurations which have perforated the bladder should be dealt with by laparatomy, more particularly those that are situated high up in the pelvis, or when a pus tube exists on only one side.

Anterior or posterior colpotomy certainly has its indications in some forms of pelvic suppuration which have opened into the bladder, and the experience of many prominent operators has proved this beyond a doubt. The same may be said of the vaginal route, when the collection has opened into the intestine and the intestinal fistula has closed without any further interference.

Vaginal incision followed by a free drainage certainly represents the most perfect type of conservative gynecologic surgery, and if after perfect drainage the tubo-vesical fistula does not close, and if the pelvic abscess has no tendency to subside, we have at least placed the patient in such a condition that an abdominal incision will usually reveal a condition of affairs that can be easily attended to in a radical manner, thanks to the preliminary drainage by the vagina.

As to closing the bladder by way of the vagina, it seems to me that perhaps in some few selected cases the method might be applicable. But the operative difficulties will certainly be very great. The technique advised by Condamin consists in doing an anterior colpotomy and then searching for the posterior wall of the bladder. After anterior colpotomy the posterior wall of the bladder is rendered very movable and without any severe traction

it can be drawn down almost to the vulva and the opening repaired.

Baumgartner was successful with the following technique: The uterus was drawn down and an incision made around the cervix. Then a median incision of the anterior vaginal wall was carried from this incision to the orifice of the urethra. The vaginal flaps thus formed were peeled back and then the bladder was dissected off. The organ was then drawn down and its adhesions with the surrounding tissues broken down. The fistula was closed by two layers of sutures, after the borders of the opening had been freshened and the bladder replaced. The pelvic abscess was drained by the vagina and a permanent catheter placed in the bladder.

The conditions under which the perforation of the bladder from a pelvic abscess occurs, vary greatly. In some instances the pelvic trouble is of long standing and the patient is worn out by suffering and sepsis. In other instances we will be dealing with a collection which has rapidly formed and bursts into the bladder, before the general health of the patient seems to have been influenced.

Occasionally the evacuation of pus by the bladder is preceded several days by certain symptoms. The patient appears to be suffering more acutely, the abdominal pain is more severe and is especially pronounced in the perivesical region and is accompanied by a feeling of weight in the pelvis. All the signs of an acute cystitis may be present, and if the urine is examined it will be found to have changed in character. It is usually high-colored, sometimes tinted with blood, and may even contain a large amount of thick sediment, but it is usually only after a few days that pyuria becomes manifest.

Usually these forerunning symptoms are wanting, and in most cases after a short febrile attack the pus suddenly becomes evacuated into the bladder, producing immediate and very marked relief to the patient.

I would point out, however, that pyuria is not always present, and it may last a few days, sometimes only a few hours, and then it diminishes and finally disappears completely. Oftentimes a long period of time elapses before a new attack recurs, which is followed again by the evacuation of pus by the bladder.

This intermittent pyuria, which corresponds to alternating evacuation and filling up of the abscess, is a fair indication of a purulent collection in the tubes, and may continue for a long

time before it seriously acts on the general health of the patient.

On the other hand, it should be recalled to mind that patients afflicted with tubo-vesical fistula do not always escape so easily, because in many instances the rupture into the bladder takes on a very high grade of sepsis. Pain is severe, chills recur frequently and are violent, vomiting is free, delirium may be present, and the face soon shows those altered traits which denote a serious infection. The temperature may reach or even go above 40° C., while the pulse is small, filiform, and may count as much as 140 to the minute.

All this will lead the surgeon to suspect a serious condition within the pelvis, but suddenly the pus is evacuated by the bladder and all the serious symptoms diminish in intensity. But in these cases the relief obtained by the voiding of the pus is not so complete as in the preceding instances, although the amount of purulent matter voided may be considerable, but nevertheless the patient does not gain strength, and the temperature chart will show that fever is still lurking within her. Such a case when allowed to run on without operation will ultimately terminate fatally.

There is still another clinical type in which the fistula, whether of a permanent or intermittent kind, will not provoke any reaction. There is no elevation of the temperature, and the patient is free from pain, and it is oftentimes only by chance, when the patient's general health has been suffering for some time, that pus will be detected in the urine.

But no matter what may be the commencement of tubo-vesical fistulas, no matter what may be their progress, whether the fistula is intermittent or permanent, whether the symptoms which accompany this condition indicate a severe grade of sepsis, or whether they appear with an absolutely benign aspect, the end result is nearly always the same, and these unfortunate patients finally die.

Spontaneous cure of these fistulas is most exceptional. They may close up and the patient appear in perfect health, but this is only an illusion, because the improvement is of short duration, and soon all the symptoms reappear.

TREATMENT OF PELVIC ABSCESS.

By HERMAN E. HAYD, M.D.,
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The pathology of pelvic disease was given to us by Goupil and Bernutz, and their teachings have been amplified and embellished by the assistance of modern bacteriology. They demonstrated that inflammatory processes travel by continuity of tissue from the endometrium to the tubes and ovaries and peritoneum, and also, by way of the lymphatics of the cervix and body of the uterus, along the lymph channels of the broad ligament and the lymph vessels between the bladder and uterus to the peritoneum and to the ovary, and even to the tube secondarily. The gonococcus travels by the route of the mucous membrane only, while the streptococcus and staphylococcus—which are the ordinary pus-producing organisms—may take either channel. Consequently we may have pus in the pelvis as the result of an extension of a gonorrheal infection, of post-abortum and post-puerperal processes, of traumas and injuries of the cervix and body of the uterus resulting from accidents occurring during labor, and of careless surgical interference and intrauterine manipulations. These infections may produce a primary tubal and ovarian abscess with secondary localized purulent peritonitis, or, by way of the lymphatics, suppurating foci in the broad ligament, or even an abscess between its folds or in the lymphatic network between the vagina and bladder, or it may extend to the peritoneum and produce a collection of pus in the free pelvis, or an ovarian abscess, or even a secondary tubal abscess.

A pure gonorrheal infection is not common; in fact, the pathology is usually the result of a mixed infection. Latent intraligamentary cysts, ovarian tumors, dermoid cysts, and other adventitious growths are often brought into pernicious activity, and acute suppuration takes place in them very suddenly as the result of the irritation of these infecting organisms. It is surprising, in studying these cases, to see how diverse and many-

sided the complications can be. In some where the infection is not severe gross lesions often result, and yet resolution of the organ to healthy function takes place; at all events, opportunities for careful and conservative surgery come when least expected. In one case the tube and ovary may be distended with pus, and yet there will be no intraperitoneal collection; while, on the other hand, the infection seems to leave the tube and involve the peritoneum, producing a large pelvic abscess, yet the tube wall may be simply thickened from exudate and the ovaries comparatively healthy; and even in these cases the infection must have traveled by the mucous membrane, because the broad ligament and structures which contain the lymphatic vessels are not involved. The contrary we occasionally see—tubes and ovaries healthy, and yet the broad ligament a huge phlegmon. There is evidently some susceptibility on the part of the individual tissues and structures which explains these different expressions of infection. Nature, by her beautiful protective processes, shields herself from the approach of pus by making dense barriers of adhesions, and, as a rule, confines the suppuration to certain definite areas. If it were possible to locate these different points and to establish free drainage through the vagina, the acute trouble would soon subside and reparative processes begin. But, unfortunately, these pus cavities are often not located; some are drained, while others are left unopened, and others are lined with a secreting membrane and will continue to cause trouble and discharge pus, as long as these membranes are left *in situ*. Therefore, in many of these cases, a cure cannot be effected unless the diseased organ be eradicated; and if it is intensely bound down to important organs, irreparable mischief will follow unless the greatest care be exercised in the delivery. Of course there are other avenues of infection, *e.g.*, through the blood stream, as in tuberculosis of the peritoneum; or by an extension of a tubercular process from intervisceral ulcerations; or directly through the healthy bowel wall, as the colon bacillus infection—this possibility can alone explain the adhesions which take place in a virgin retroverted uterus; or again by way of the ureters and pelvis of the kidney.

The advocates of the vaginal method of operating attack all these cases, with but few limitations, from below, and they presuppose a diagnostic ability which we all know none of them possess. For example, so good a man as Pryor, and one whom I respect most highly for all that he has taught us in vaginal work,

says: "I would always consider that the vaginal is the operation of election in all cases of pelvic suppuration where the vermiform appendix did not require removal, and where there was no fistulous opening between a coil of small bowel and a pus sac." We all know that it is impossible to say in a given case of pelvic suppuration that in this patient the appendix is adherent to the pelvic mass and is diseased and requires removal, while in another such a complication need not be expected. I have frequently delivered a large pus tube or ovarian abscess and found that I had torn away or stripped off the peritoneal coat from the appendix—in fact, so mutilated the organ that I had to resect it close to the cecum and close up the bowel opening. And if this experience were confined to right-sided disease alone, there would be some excuse for his sweeping classification; but sometimes I have found the appendix long and adherent to the left tube or ovary, and its coats so infiltrated that it was necessary to resect it close to the bowel attachment. So with fistulous tracts; and although they most frequently exist between the pus tube or ovarian abscess and the sigmoid flexure or rectum, yet it is impossible to make such a diagnosis, and if there existed other openings into the small bowel and they were left uncared for death would probably follow. Kelly reports a number of satisfactory experiences in connection with vaginal puncture in localized tube and ovarian pus collections. Not only did these cases recover from the operation, but the tubes and ovaries got well and functionated. I must confess that I have had no such good luck, and beg to say that in every case that I operated through the vagina and drained an appreciable amount of pus through the cul-de-sac, later, in some within a few weeks and in others within two years, an abdominal section was necessary to relieve these patients of their suffering and chronic invalidism, due to adhesions between ovary, tube, or uterus and pelvic cavity, and bowel and omentum and bladder, or to recurrent collections of pus, with fever and the usual accompanying constitutional symptoms.

However, there is a class of cases—and it is this class that I wish to bring out particularly in this paper—where vaginal drainage, supplemented with curettage when indicated, should be first employed to get rid of the free pus, and then later an abdominal section should be made to cure the patient of her suffering, when the danger and risks associated with such an undertaking are reduced to the minimum. All of you will agree that a large collection of pus low down in the pelvis, in a mori-

bund woman, should be evacuated through the vagina, and nothing more undertaken unless some grave complication sets in. But to this weak and dying class of patients I am not calling your attention in this paper, but to the strong women who are suffering from acute, active streptococcic infection, who are running a high temperature with great pain and tenderness, who are in splendid physical condition and, under ordinary circumstances, ready to undertake capital operations, and in whom there can be felt an acutely tender mass low down in the pelvis on one or both sides, and even filling up the cul-de-sac, and in whom we are positive there exists pus, which is easily determined by a large aspirating needle passed through the vault of the vagina. In this class I strongly recommend an early vaginal incision for the purpose of draining off all the free pus, and, if necessary, extend the incision to one or both sides and evacuate a tubal and ovarian abscess, if easily reached. This procedure is without danger, and instead of increasing the difficulties of future operations they are very much simplified. The size of the mass is diminished; the immediate dangers of rupture into the bowel and bladder or peritoneum are lessened; the pain and constitutional symptoms subside; and the pus organisms are no doubt lessened in their virulence, and the whole clinical picture of the case is improved and changed.

Of course it is possible that even such a case may get well without any further interference, and it is so claimed by many good men, but on that point I have expressed my doubts; but the experience with a number of successful cases of this kind has satisfied me that this course of treatment I am advocating should be very generally adopted. For a number of years I have felt an increasing anxiety in operating upon acutely sick women, with high temperature and marked constitutional disturbances, by abdominal section, and if it is possible for me, with ease and without danger to surrounding organs, to first drain off the pus through the vagina and in this way lessen the possible danger of contaminating the peritoneal cavity at the time the abdominal section is performed, I attempt to do so. If one or more pus cavities are opened and the pus has freely escaped, the temperature usually falls and the general condition of the patient improves very much; the local signs and symptoms of the disease are relieved; and then in the course of a few weeks, when the section is done, not only is there no free pus encountered, but I am satisfied the micro-organisms have lost most of their virulence

and consequently the dangers of the operation are very much lessened. If, however, the temperature continues high I should not hesitate to act promptly and operate from above, because I should then assume that higher up there must be another collection of pus, and to make any further attempts to locate it from below would be unwise, because such manipulations are blind and perhaps would be dangerous procedures. Unfortunately these patients are not cured by vaginal drainage, and sooner or later, often within the first few weeks, the diseased organs must be removed by laparatomy or through the vagina; and it is surprising to see how easily the various structures are separated, and if the vagina has been properly prepared and the abscess cavity thoroughly washed out with peroxide and copious irrigations of water or weak bichloride solution, the dangers of infection are practically *nil.*

Last winter I had an interesting run of these cases, having operated upon three in two months, and I was impressed more strongly with the wisdom of the practice, although for a number of years I have been carrying out this course of treatment. All the women made splendid recoveries and are well and happy. These three cases practically presented the same history. All had suffered for years from womb trouble, but not seriously, and none had had children for a number of years. So far as I could make out, in none had there been recent gonorrhea or a history of abortion. All were suddenly taken ill with great pain and high fever and marked constitutional disturbances. In all, huge abscesses had been drained through the cul-de-sac—one of the patients Dr. Crockett operated upon twice through the vagina and evacuated a large collection of pus each time. A low fever continued for three weeks; the evening temperature would run to 101°, with exacerbations of acute pain; and when it was evident that no cure could result without further interference, the abdominal section was performed. All the operations were surprisingly easy; the adhesions were very general, but easily separated. No free pus was met, and, other than thickened tubes and enlarged ovaries, nothing was found, although the ampullar end of one tube contained pus, but the broad ligaments were not especially involved. These cases were, therefore, the result of mixed infection and took the route of the tubes and had a complicating purulent peritonitis; and it was this pus collection which we drained per vaginam, and had we not done so before performing the section I am sure a large mortality would have

resulted. All pus in the pelvis is fortunately not dangerous—in fact, most old collections are sterile; and it does not matter whether the bowels are bathed in it as the result of a rupture at the time of operation, for little harm results. But active, virulent pus, as indicated by high fever and marked systemic disturbance, is not so benignant. Many of you will claim that the accomplished surgeon can protect the peritoneal cavity by gauze towels and do away with the necessity of previous vaginal drainage. Others of you will say that with copious irrigation and a properly placed drainage tube the peritoneum will take care of itself. But this is not always true, as all these precautions have been carefully and thoroughly attended to by myself, yet too many of my cases have gone on nicely for thirty-six to forty-eight hours, and, when hope was high, quickly died of septic peritonitis. Through the opening in the cul-de-sac a piece of iodoform gauze was loosely packed and served for drainage. The vaginal-hysterectomist has to remove the uterus in order to deliver satisfactorily the pelvic masses, but he also claims that the uterus without tubes and ovaries has no value in the physical economy. Moreover, he says it is a menace to the woman's future well-being, because cancer is so easily engrafted upon it. These are also sweeping statements and will not bear the crucial test of experience. True, cancer may develop in a womb without tubes or ovaries, and a womb without tubes or ovaries may be the source of future annoyance and suffering and may have to be removed; but that is no reason why every uterus should be sacrificed when it appears healthy and is free from erosions and cervical tears. Moreover, it is impossible to always tell what the condition of the tube and ovary is when a pelvic abscess exists, because one tube or ovary could have caused this complication and the other be quite healthy or, at all events, capable of being restored to future usefulness. In one of the three women I recently operated I did the laparatomy later to relieve a retroverted uterus which I did not know existed when the big abscess was opened, and I found one tube and ovary practically healthy. I then did a ventral fixation, and since then the woman has menstruated regularly and may at any time conceive and beget a family. Such possibilities are denied women when every uterus is removed, because we conclude upon a vaginal examination that with a big pelvic abscess surely both tubes and ovaries can be no good. Moreover, it was not possible in this case to tell what condition the tube and ovary were in until they were inspected

from above. From below it was impossible, because the tube and ovary were adherent high up on the roof of the pelvic abscess, and could not be distinguished from other tissues. The objections to opening the abdomen are very serious, and the least of them is that a scar results. The great danger and serious drawback is that an adhesive inflammation is set up in many persons, and as a result adhesions between omentum and bowel and abdominal wall are made possible, with all their future dangerous complications. Three times I have operated for obstruction of the bowels coming on some years after a simple laparatomy. In two of the cases I did a simple ventral suspension, because I did not then know how to always successfully perform an Alexander operation, and from the third woman I removed a small ovarian cyst. Each life was sacrificed, as they were *in extremis* before I saw them; but they showed what possibilities may follow a simple abdominal section. The mere opening of the abdomen is not a serious matter, so far as the immediate mortality is concerned, but it is the dangers from remote complications which would make the vaginal route preferable, providing we could establish a satisfactory diagnosis and be able to work with assurance and confidence. But this is impossible, and there must, therefore, always be cases best attacked per abdominem, and others best reached per vaginam, backed up by the individual qualifications of the operator.

THE VAGINAL ROUTE FOR OPERATIONS ON THE UTERUS AND APPENDAGES; WITH CASES.

By JOSEPH H. BRANHAM, M.D.,
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In contributing this paper to the society my object is simply to give my personal experience in operating on the uterus and its appendages by the vaginal route, deducing therefrom some conclusions which I hope may be of interest. In doing this I shall try to bring out the advantages of this method, and also note its limitations. To study more carefully the results of this method, I shall take up the various conditions in which it is used and consider each separately.

1. *Pelvic Inflammation.*—This is the most common condition threatening the life of our gynecological patients, caused by gonorrhea, abortion, tuberculosis, and other conditions not always discernible, and often requiring prompt action to save life. Here the vaginal method of treatment makes its best showing. Even before the appearance of Henrotin's timely paper I had begun to use the method of vaginal drainage in treating these cases. A few operations by the abdominal route with uphill drainage through a glass tube, resulting in sacrifice of organs, abdominal hernia, and slow or incomplete cure, convinced me that opening and draining the abscess through the vagina was the more rational method.

The operation is, briefly, as follows: after carefully cleaning the vulva and vagina, the uterus is curetted and packed with sterile gauze saturated with a solution of carbolic acid and iodine (20 per cent) in glycerin. A small incision is made through the mucous membrane back of the cervix; then a pair of forceps is forced into Douglas's pouch, the blades separated so as to admit the fingers. This opening can be dilated to almost any extent. The pelvis is now thoroughly flushed with salt solution, after which the organs are carefully explored; usually one or both

tubes and ovaries must be opened. If the ovaries are entirely destroyed they can be readily enucleated and removed. In such cases it is sometimes best to bring down the tubes, and, if they are necrotic, to excise them, either tying or clamping the stump. In most cases, however, it is best to simply open thoroughly all the cavities, cleanse them, and drain with iodoform gauze.

Results.—I have operated on more than one hundred cases by this method, with three deaths. The first fatal case was the result of general septicemia, due to forcing a sponge tent through the uterine wall in an attempted abortion. The tent was removed from the pelvic peritoneal cavity, the patient dying a few hours later—a hopeless case, operated on in a dying condition. The next case died from shock, probably due to the use of a bichloride solution which was employed by the nurse instead of salt solution as had been directed. The third death followed an exploratory incision in a case of general plastic peritonitis caused by the use of a strong solution of mercuric chloride in the bladder of a woman, for gonorrhea. This treatment was ordered by her husband (a mechanic) without consulting a physician. In this, as in the first case; the operation was done in a hopeless condition, and had nothing to do with the fatal result.

More important than the mortality is the condition of these patients after operation. The acute case in which the toxic agent is gonococcus or other germ of moderate virulence often entirely recovers, and many women who have had salpingitis of this type afterward become pregnant. In others the results are not so favorable and recurrent or chronic inflammatory conditions may require secondary operations. As a rule, however, even the severer cases gradually improve; and although the functions of the ovaries and tubes may not be restored, still the lot of these patients is happier than that of the many women who have undergone castration.

In a few cases the organs may be so thoroughly diseased, especially the trouble due to tuberculosis, that complete removal of the uterus and appendages becomes necessary. In chronic cases various conservative measures may be employed, adhesions broken up, tubes and ovaries freed; the former may be straightened or even resected. By opening Douglas's pouch great assistance can be gained in doing Alexander's operation when the organs are bound down by chronic adhesion.

Vaginal drainage is the method usually used in the treatment of pelvic abscess at the present time. Current literature,

however, shows that many operators still employ the abdominal section in pyosalpinx with ovarian or pelvic abscess, often removing tubes and ovaries. In view of the greatly lessened danger and far more conservative and better results from vaginal drainage, the grave operation should at least be limited to those cases where the infected tubes are situated very high in the pelvis, or after the acute symptoms have passed.

CASE I.—Miss A., aged 16, school-girl, was seized, June 1, 1902, with severe abdominal pain accompanied by a chill and vomiting. I saw her June 2 at 10 A.M.; found her condition as follows: great tenderness over the entire abdomen, with exaggerated sensitiveness over the right inguinal region; temperature 103°, pulse 126. Ordered calomel purge and hot fomentation to the abdomen. June 3, 10 A.M., temperature 102⅘°, pulse 128, general condition little changed. After consultation at 1 P.M. with Prof. C. U. Smith and Dr. B. K. Stumburg—the latter of whom made a blood count, finding marked leucocytosis—diagnosis of internal abscess, probably due to appendicitis, was made. Patient was removed to the Franklin Square Hospital and at 8 P.M. was anesthetized. Examination now showed that the abscess was on the right side and was confined to the pelvis. The patient's condition at this time was very bad; temperature 105° and pulse more than 150. Vagina dilated and an opening made into the pelvic peritoneum. A large quantity of foul-smelling pus escaped. After thorough flushing the right ovary was found to be thoroughly necrotic and was enucleated. The abscess was limited to the pelvis and no evidence of appendicitis could be discovered. Patient made a rapid recovery and returned to her home entirely well in three weeks. Bacteriological examination showed the presence of colon bacillus and a staphylococcus. The vagina, vulva, and uterus were all small and entirely free from any indication of infection, so that the source of the contagion must have been internal.

Neoplasms.—Vaginal hysterectomy for carcinomata. The advantages of this method for operation on uterine cancer are the greater ease and rapidity with which it can be done; the more complete control of the involved area, which lessens the danger of operative transplantation; the more thorough removal of the danger zone in the vagina and lower pelvic plane; and the lessened mortality. In cases where the lateral pelvic tissues and glands are involved abdominal section should be made in order that the diseased tissue may be more thoroughly resected.

Myomata. In cases of small multiple myomata where tumors are very numerous, vaginal hysterectomy is easily done and in my experience has proved a very safe and satisfactory operation. Vaginal myomectomy is advisable when the growth is in the lower posterior segment of the uterus and is single. Under these conditions the operation is not difficult.

CASE II.—Mrs. C., aged 40, white, widow; operated September 20, 1900. Examination showed a small myoma situated in the lower segment of the uterus posteriorly. On opening into Douglas's pouch and exploring the organ, growth was found to be single and about the size of a hen's egg. It was drawn into the incision and enucleated; the uterus was carefully sutured by catgut. The patient made an uninterrupted recovery and is still in excellent health.

CASE III.—Mrs. W., aged 39, white, married; operation January 10, 1901. This growth was smaller than in the previous case and was complicated by chronic pelvic inflammation and purulent endometritis. After uterine curetment an operation similar to the above was done. In this case acute pelvic inflammation followed the operation, and patient was quite ill for several days; afterward her convalescence was slow. She was recently examined by me and is entirely free from pelvic symptoms and enjoying excellent health.

Extrauterine Pregnancy.—I have operated in four cases of this nature by the vaginal route; it has been especially advantageous in cases of some days' standing where elevated temperature indicates infection. The danger of infecting the general peritoneum is avoided by this method. All my cases have done well, and one is of sufficient interest to deserve relating:

CASE IV.—Mrs. V., aged 21, white, married, mother of one child 8 months old, complained of severe uterine cramp for several days, which was accompanied by slight bloody discharge from the vagina. On November 30, 1897, she was seized with great pain and symptoms of collapse, followed by intense uterine and rectal tenesmus. Examination showed pelvis filled with fluid and clotted blood. Extrauterine pregnancy was diagnosticated. As soon as the patient could be prepared, opening was made in Douglas's pouch, large quantity of fluid and clotted blood washed out. The left tube was brought into the incision; a recent rupture was found near its fimbriated end. When the adherent clots were removed a vessel began to bleed; this hemorrhage was controlled by a clamp which was left on for

twenty-four hours. The pelvis was packed with iodoform gauze, which was removed on the third day. The patient's recovery was uneventful; she became pregnant and gave birth to a healthy child about seventeen months after the operation.

Conclusions.—Vaginal drainage is the natural method; it is far more effective and safer. Extensive pelvic inflammation associated with pus formation rapidly walls off the general peritoneum; this wall should not be broken through and cannot be interfered with without danger of general peritonitis. Opening through the vagina is associated with a minimum amount of shock and hemorrhage, and is thus indicated in extreme cases associated with severe toxic symptoms.

While freer dissection in the lateral pelvic plane for infiltration complicating uterine cancer through the abdominal route can be made, yet the less thorough dissection of the surrounding vaginal wall, and the greater danger of operative transplantation with increased mortality due to shock and infection by it, render vaginal hysterectomy the safer operation and the one to be advised in most cases.

DISCUSSION ON THE PAPERS OF DRS. PRICE, CUMSTON, HAYD, BRANHAM, AND WILLIAMS.

DR. WALTER B. DORSETT, of St. Louis.—I shall limit my remarks mainly to the paper of Dr. Hayd. Vaginal incision, not vaginal puncture, in recent cases of pus collection—not pus in the tube, but pus free in the cul-de-sac of Douglas—is justifiable and is rational surgery. My experience has been a little more favorable than Dr. Hayd's, inasmuch as I have reported several cases in which pelvic abscesses were evacuated through the vagina by puncturing the cul-de-sac of Douglas. One of the women has borne one child since, another has had two, showing that the ovaries and tubes functionated afterward. Both are perfectly well to-day.

In so far as my experience goes regarding pelvic surgery, if we have an acute inflammation, whether it is a streptococcus, a staphylococcus, or a gonorrheal infection, the case is almost always more serious when a laparatomy is performed, and, as I stated in my paper read at the Toronto meeting of this association, incision in the posterior vaginal fornix was for the purpose of expediency, to bridge the patient over, not for a moment to dismiss her, but to care for her when the pus was virulent, with the intention of doing an abdominal section at a future

time. In dealing with an ovarian abscess I would not think of going through the posterior cul-de-sac with a view of removing the ovaries or tubes in that way. I do not believe that class of cases belongs with those spoken of by Dr. Hayd.

With reference to extrauterine pregnancy, spoken of by Dr. Branham, I have opened the cul-de-sac of Douglas in two or three instances and extracted the fetus in that way. Where the placenta is attached to the omentum or intestine, or end of the tube, this is an extremely hazardous undertaking. If the afterbirth is loose and can be gotten at and removed, that is the better way to accomplish it.

DR. C. L. BONIFIELD, of Cincinnati.—The papers we have heard read constitute an interesting group, and the subject can be very well divided into three parts. First, are palliative operations for pus in the pelvis ever indicated? Second, shall radical operations be done through the abdomen or through the vagina? Third, shall we employ drainage or not after these operations?

Briefly, as to the first question, I thoroughly agree with everything Dr. Hayd has said, but I disagree with some of the statements made in the paper read this morning, which stated that palliative measures were never indicated and that drainage of pus per vaginam was unsurgical. I cannot regard it as such. Any one who will take the pains to drain these cases to see whether they will improve or not, can be convinced of the good effect of drainage. I do not claim it will cure many cases, but the great majority of cases will be so benefited by it that a radical operation becomes much easier. Oftentimes the incision can be made above Poupart's ligament; occasionally in the median line. It does not matter whether the infection is gonorrheal, streptococcic, or tubercular; if the accumulation of pus is large, an operation can be done more easily if drainage be first resorted to. I remember one case of tubercular inflammation where the right tube was distended above the umbilicus. I made an incision in the median line below the umbilicus, drained off a large quantity of pus, and when I came to do a radical operation the tube was scarcely larger than my two fingers. Its removal was easy indeed. The same is true of infection after delivery. Any one who operates on these cases during the acute attack assumes unnecessary risk. There may be a few men who are skilful enough to operate with a comparatively low mortality; but the average practitioner, who operates for pus in the pelvis, with a high temperature, where the pus is scattered, will have a high mortality.

I have said that a few cases can be cured by incision and drainage. I have been draining these cases for more than twelve years. I have seen patients within the last two months who were drained six years ago, and they are well, as well as patients who have been subjected to the most radical operations. Of course, I admit that it is only in the minority of cases that we obtain such results.

Shall the radical operation be done from below or above? I have been an advocate of abdominal operations because we can see what we are doing; we can do more complete and thorough work. Shall we drain after abdominal operations? It depends very largely on whether we have spilled pus, whether we are able to cover up raw surfaces, and whether there is any oozing when we get through. If we can do ideal surgery, drainage is not necessary; and when it is not necessary we don't want it, for the reason that it prolongs convalescence. However, in a large number of cases drainage is a safeguard. When we resort to it, how shall we do so? Always by the vagina. In draining after operations on the gall-bladder, if drainage be made from the back, gravity will help, and it is more complete. The cul-de-sac of Douglas is the lowest point in the pelvis, and free drainage into the vagina surely will be obtained.

As to conservative work on the ovaries and tubes when invaded by gonorrhea, I will simply mention a case that I reported before the American Medical Association. I operated on a patient who had tubo-ovarian abscess on one side; the other ovary was also invaded with gonorrheal infection, and part of it cystic, the tube being filled with water, necessitating the complete removal of one appendage, with amputation of the other tube at about the junction of its distal and middle third, together with resection of half of the ovary. A professional friend in Cincinnati delivered that woman of a healthy child about two years after I did the operation.

Dr. Joseph Price, of Philadelphia.—I desire to say that one or two of the papers are a surprise to me on account of their teachings. If the surgeon can arrest infection he will save life, it makes no difference how it is done. For instance, an acute appendicitis, taking it as the type of a murderous disease, is infectious from its inception. All over this country at present there is scarcely a railroad which is not carrying men, women, or children who are dying of appendicitis. I think that this simply means that surgeons are not as yet fully prepared to meet the demands of the laity. No one would dare to tell me that I should not operate upon cases of acute virulent pelvic peritonitis, and do so in the midst of the flames, so to speak. I have no hesitation in saying that I have saved such cases by the hundreds, and there is scarcely a member present who has not seen me wash away pus and filth in large quantities, the accumulation of only a few days or hours.

Speaking of vaginal work, I am satisfied that it is largely practised because it is easy. However, there is a great deal the operator does not know and never will know when he resorts to the vaginal route, except to ascertain his ignorance at the post-mortem examination. Extirpation of the uterus by the vagina I regard as one of the easy operations in surgery. In Jacobs's 72 cases of bilateral suppuration of the appendages, I believe he had nine visceral lesions of the large and small bowel, bladder,

etc. Jacobs and Ségond have both abandoned the vaginal route. They came to America on a missionary trip, but admitted later that they had been enlightened and re-educated. I know perfectly well that suprapubic work is trying and difficult, because it is complete work. Vaginal work, on the other hand, is easy because it is imperfect.

If one will read the ancient literature before advocating vaginal incision and drainage, he will find that vaginal drainage is an old procedure. In advocating vaginal puncture or incision, surgeons are giving to ignorant general practitioners without experience a method with which they may do serious damage or mischief. They will resort to vaginal puncture when they will not adopt the suprapubic route and do an up-to-date operation with both eyes open.

DR. A. GOLDSPOHN, of Chicago.—I feel exceedingly interested in this subject, and am sorry that I have to criticise the remarks of Dr. Price. In the first place, he confuses decidedly different pictures or states of pathology. In the next place, he confounds chronic and non-suppurative conditions with acute suppurative conditions. That is a radical fault which must be righted before we can accept argument. Again, he confuses conditions arising from the appendix vermiformis with suppurative infections in the parametrium and the uterine appendages. There is a very wide difference in the nature of these cases. A suppuration springing from the appendix is a limitless and treacherous fire that had better be put out, and the sooner it is done the better. I have come to that belief slowly, but I admit it.

We are now speaking of the treatment of pathological conditions within the pelvis, and not of anything in the appendix. We are talking about pelvic abscess; we are speaking of inflammation which begins not in the uterine appendages, not in the peritoneal cavity, but in the pelvic cellular tissue, around the uterus beneath its peritoneal coat and between the layers of the broad ligaments—parametritis or pelvic cellulitis which does not exist in ordinary gynecological conditions. But it occurs quite commonly in puerperal conditions and otherwise from septic traumatisms inflicted by careless, ignorant, and criminal use of instruments, within the uterus or upon its walls.

In puerperal states, pelvic cellulitis or parametritis has occurred and always will occur as the primary or initial pathologic process as long as woman ever becomes infected during childbirth or a miscarriage. The pathologic condition which we aim to relieve with vaginal draining is one in which the initial infection or inflammatory process begins, not in the appendages, not in the peritoneum, but in the parametric or cellular tissue that I have spoken of, around the uterus and in the broad ligaments. When does that kind of pathology occur? To explain that, I think the profession does not make a sufficiently clear distinction between the gynecological uterus and the puerperal uterus. The former we should look upon as having a firm, leathery, muscular

wall, and the latter as a very soft, areolar, and vascular muscular bag, with an abundanee of lymphatics in its walls that are wide open; even the veins are open.

Infection occurring at the external os or cervical canal of the puerperal uterus does not have to travel to the fundus and then around through the tube the long way to get into the peritoneal cavity. It can readily go directly through the cervical wall and get into the cellular tissue, and this is the type of puerperal infection. This leads primarily to tumefaction and abscess formation in the pelvic cellular tissue, a cellulitic abscess, if you like, which bulges downward usually. We find a tumefaction back of or at the side of the uterus usually. This fills the cul-de-sac and raises the uterus up bodily toward the symphysis pubis and sometimes crowds it to the opposite side. A case that does not present any such exudate, which is accessible, and creates sufficient space to drain between the rectum and the uterus, is, in my estimation, not a proper one for such vaginal treatment and should be treated from above. The cases that can be attacked from below are with tumefactions, abscess formations, located low down between the rectum and uterus, and usually bulge the vault of the vagina downward, not necessarily in the posterior line; it may be laterally.

As to the technique, I think it is a little unjust to speak of vaginal puncture as Dr. Price does. There is nothing radical about puncture. A vaginal incision must be made, and the vaginal incision which I have practised in more than a hundred cases has been a long transverse one, never less than two inches in length, made preferably with the Paquelin cautery, so as to control bleeding, which is otherwise sometimes troublesome. After making this long transverse incision, I break down the intervening cellular tissue with a finger and enter the peritoneal cavity. If it be an ovarian abscess, and not a pelvic cellular abscess, the finger finds its way laterally into that abscess, breaks down the meshes, making one cavity out of a honeycomb. Then the cavity is packed thoroughly with gauze, which is left in an entire week, when it is renewed once after irrigation of the cavity. Mere vaginal puncture with a scissors, and merely stretching an opening and then putting in gauze, I would consider imperfect work.

As far as the good of the operation is concerned, from the way I do it, I agree with Kelly as to the results. Dr. Price refers to one fatality. I wish to say this: if Dr. Price or any one else attacked all of these cases suprapubically, probably one out of ten would die. Many of these cases are nearly dead when they come to us; they are not in a condition to stand an abdominal section, or any radical operation. They do stand, however, vaginal drainage. If we attempted to do a radical operation, the chances are that many of them would die. Contrary to my own expectations, nearly all of the cases I have described and treated in the manner mentioned have recovered; and the majority of

them did not require any second operation either. Many of them have borne children. In some of them, of course, I have had to do a second operation.

DR. JOHN B. MURPHY, of Chicago.—I expected such a discussion as we have had, yet I do not believe that we are as far apart in dealing with these cases of pelvic abscess as the discussion would seem to indicate. Furthermore, I believe it is our duty to come together, to know what we are talking about. We have no right to permit these discussions to go out from this association in a loose and haphazard manner. We must have definite pathological conditions and a definite understanding. In my estimation, the term pelvic inflammation has no right in surgical literature. It should be expunged. We might just as well say an inflammation of the arm, whether we meant a tendo-vaginitis, paronychia, or gangrene of the arm. Pelvic inflammation means about the same thing pathologically, and in that it is a vague and indefinite term. It should not be used. We have in the pelvis distinct types of pathology, due to certain definite types of infection, which go through typical and classical courses; and until we discuss the pathology of the pelvis first, we cannot come to a rational agreement as to what method of operation we should resort to.

I was very much pleased with Dr. Hayd's arrangement of his cases. He treated the subject in a proper way, but I fear that in the discussion we have drifted away from the subject at issue. If we speak of pelvic inflammation, post-partum, post-abortive, gonorrheal, or appendicial, as one and the same, then we have no clear idea of what pelvic infection means. These are merely the sources from which the infective material comes. Let us follow them up, and find out why these infections are arrested, and what are the pathologic changes which they produce. What are the conditions that exist with them? What are the conditions that would be present if we were to drain and not remove the abscess? What are the conditions that are absolutely necessary to demand removal of these pelvic abscesses or infections?

Pelvic infection means an infection of the pelvic cellular tissue, if we are going to use that term, and it must be confined to that alone. We have in the pelvis other tissues, as the uterus, which may become infected, or we may have a phlebitis therein. Furthermore, we have the tubes and ovaries, which may be infected, also the cul-de-sac of Douglas, which may become a receptacle for the infective material. Let us go back to the nature of this infection. If it be a gonorrheal infection, start with the history and make a diagnosis, for such an infection usually involves the mucosa of the uterus and tubes, and, being only a surface infection, will continue until the mucosa is removed. A typical pus tube is not alone an infection of the mucosa, but in an infection of a mucous membrane with both ends closed we have a stricture or an occlusion of the neck of the tube and an inflammatory sealed fimbriated end. If this represents (illustrating on

the blackboard) a swollen tube, it comes down to this narrow portion or stricture. We have the symptoms of a peritubal infiltration sometimes. We have a stricture of the neck of the tube always from gonorrhea. What good would it do to drain the infected mucosa, if we allow the stricture to remain? We have ultimately to take such a tube out, no matter how frequently we drain. It is a mucous cyst and continues to secrete. It is an entirely different proposition when we have a streptococcus or staphylococcus infection to deal with. If we drain the tube, the tendency is for its mucosa to return to its normal condition; but if there be a cyst of the tube, a hydrops of the tube, which we occasionally find with a history of previous attacks of postpartum infection, it may be necessary to remove the tube.

Let us take another type of infection, namely, ovarian abscess of the mixed variety. It may have an epithelial or a connective tissue lining; if it has the former, as in a case of gonorrheal infection, the rule is that that ovary must be removed to cure the disease. If we have a gonorrheal or tuberculous tube to deal with that drains into the bladder, it will not get well until the infected mucosa is removed. Rupture into the bladder does not cure it. If we have a cellular abscess that occurs postpartum, which is merely an abscess in the connective tissue of the broad ligament or perimetrium, and drain, it will get well. Healing will take place as in any abscess surrounded by connective tissue. If we have a case of suppuration in the cul-de-sac of Douglas, the result of an infection of the tube after an abortion, and the abscess be drained through the vagina, it will get well. It is entirely different when we have an infected mucosa. The picture is changed. The conditions are different, and the treatment has to be of a radical character—removal. I do not resort to the vaginal route for any other than infections of the connective tissue, cellular abscesses, and cul-de-sac accumulations. All the other pathological conditions, abscess of the ovary included, can be dealt with better by the abdominal route.

DR. J. H. CARSTENS, of Detroit.—Let us take a pelvic abscess which develops in the cellular tissue following confinement. I hold it is better treatment to incise that abscess and drain it than to adopt the method recommended by Dr. Price. The wound will heal without any trouble, Dr. Price to the contrary notwithstanding. If I have a case of large pus tube, deep down in the cul-de-sac of Douglas, adherent, and the woman has been lying on her back for ten weeks or more—if, I say, I am called to such a case and find the woman suffering from inanition, indigestion, besides a septicemia, then I hold, if I take my knife, as I do sometimes, without any anesthetic or any preparation, and make an incision and let out the pus, it is good practice, in that the woman will recover from her pelvic condition and septicemia, so that six weeks later I may again operate for the purpose of

removing the pus tube, if the tube is still diseased. In some cases I find it is not. I believe that is good, sound practice.

If a patient is brought to me with an acute suppurating ovary or tube, and it is in the cul-de-sac, and she has not a high fever, I hold it is good practice to puncture at the cul-de-sac and let out the pus; and if I feel around with my finger and I can shell out the tube, cut it off, or put on the angiotribe, I do so, and if the woman remains well afterward, it is, I say, good surgery. If I get a case of ovarian abscess and can remove it from below by the aid of the angiotribe, and the woman recovers, I consider it good practice.

As to the paper of Dr. Branham: if I have a patient with several fibroid tumors of the uterus which begin to cause a great deal of dysmenorrhea, etc., I know that uterus must come out. If I can take it out through the vagina, it will lessen the danger of the operation, shorten the convalescence, prevent an abdominal hernia, and get the woman on her feet in eight or ten days, it is good practice, anybody else to the contrary notwithstanding.

It is foolish for us to try and spread out this subject. Let us stick to the point, and, as Dr. Murphy has said, we are not so far apart. You all know what I do. Most of you do the same thing. There are conditions that we can deal with through the vagina; there are other conditions which we find it is more prudent to attack through the abdomen. Where I am able to diagnosticate a case beforehand and am pretty well convinced that I have an adherent appendix complicating a pus tube to deal with, I do not remove the tube through the vagina, but by the abdomen. If it is not so, I take the other route. Some of you may say that I am simply an abdominal surgeon and do work only through the abdomen. I want to do it through the vagina, through the abdomen, the rectum, or any other channel that I consider best for the case, and as surgeons we should adopt any and all routes. That is the principle we should work for.

DR. RUFUS B. HALL.—Let me ask you a question, Dr. Carstens. Will you kindly tell us how many times in a year in all of this work (we all know it is a large work) you attack these emergency pus cases by the vagina, and afterward do an abdominal section on them? Do you do all of your operations the way you have described?

DR. CARSTENS.—No. I select my cases. If I can operate on a case by the vaginal route, I do it; but if I think there are complications in this case or that case, I select the abdominal route. For instance, if I have a case with extensive adhesions and involvement of the appendix, I would do an abdominal section. But if the abscess is situated low in the cul-de-sac, then I would endeavor to remove it by vaginal section. If the patient is very weak, and badly run down, I would drain first and operate on her later, if necessary.

DR. PRICE.—Do all the cases you drain in this way get well? What percentage of cases require section later?

DR. CARSTENS.—Dr. Kelly has given us statistics in regard to those cases. I have not looked up my own tables, consequently I cannot give the exact number. I am not doing this every day, but I suppose I operate on a dozen such cases a year—that is, on pus tubes that I drain—and out of that dozen there are probably only three upon which I have to do abdominal section subsequently. They either get well or I lose track of them. If I were to operate on this dozen cases of pus tubes through the abdomen and do a radical operation, I know nearly all of them would die, while by the other method nearly every one of the twelve would live. You will remember that the late Lawson Tait had 15 per cent mortality in that kind of cases. Very much depends on the nature of the infection you get. A gonorrheal infection is not as dangerous or serious as a streptococcus or mixed infection, and many of the latter patients die when subjected to radical operations.

DR. PRICE.—I have had thirty bad cases in bed, covering a period of seven months, in which there has been but one death. It sounds like ridicule for men to say that these patients cannot be saved. I lament a discussion of this kind. It is not fair to abdominal surgeons, neither is it fair to the public. I do not believe such a discussion ought to go out from this association without a modification of some of the statements that have been made. Here we are talking to a group of abdominal surgeons whose skill and ability are unsurpassed anywhere on the face of the earth, particularly for the good results in doing surgical work in the right iliac fossa, in the region of the gall-bladder or pelvic basin. It is an error for any one to say that most of these cases of mixed infection die. They do not die at the hands of good pelvic surgeons. Many of them are saved.

DR. RUFUS B. HALL, of Cincinnati.—I believe we are all nearer together than the remarks of Dr. Price would lead us to suppose. I do not believe those of us who tap an occasional abscess by the vaginal route should be relegated, as the railroad men say, to the scrap pile. But I believe that Dr. Price sees cases that the average operator can save by draining temporarily, while that same operator would probably lose some patients if he resorted to a radical operation. I make many sections a year myself, and occasionally I resort to vaginal section for pus. Let us take a case that we are called to see at the eleventh hour, and you all encounter such cases now and then. Either the husband or the patient will not consent to an operation until she is nearly dead. If you do a section on such a woman, she will almost certainly die. She is not able to take an anesthetic. But if you can evacuate the abscess, take her out of the profound sepsis by drainage, and three or six weeks later do a radical operation, you may save that woman's life, whereas she would die if a more radical operation were performed primarily. I venture to say that I have saved three patients a year whose cases could be clas-

sified as belonging to this desperate group, by resorting to vaginal drainage.

I believe it is our duty, those of us who practise vaginal drainage in desperate cases, to tell the reason why and what to do for them afterward. I recall one case in which I resorted to vaginal drainage a year ago. The woman is now symptomatically well, and I have not had to do a secondary operation. She had gonorrhea ten years ago. She has adherent appendages and a retroverted uterus. She should have an operation and would be better off if it were done, but she said to me, "I am well enough without it at present."

DR. L. H. DUNNING, of Indianapolis.—I do not wish to say very much on this subject, as we have covered the ground pretty thoroughly in our previous discussions. I do not believe we are very far apart. I have been compelled to differ from my friend Dr. Price, and I have felt somewhat humiliated when through with our discussion at previous meetings, because I know his vast experience and great skill as compared with my own. But I feel convinced that vaginal incision in many instances is a life-saving procedure. It should not be discarded *in toto*. Dr. Hall has given us clear and well-defined indications for this procedure. I began this method thirty years ago, when we knew no better, and it yielded such splendid results that I have continued it to the present time. I am prepared to state that out of a hundred and fifty cases in which I have practised vaginal incision, only one has died as the result of the operation. I have not been called upon to do a secondary operation more than four times, although I have at present on hand two cases requiring such secondary procedure. There are a few indications that are clear and distinct in my mind for the vaginal operation. One is that the patient is acutely ill and the abscess large and situated behind the uterus; that it shall push the uterus forward or to one side; that it shall be immovable. I would not attempt to incise a large abscess through the pelvis that was freely movable. I would remove it by the supravaginal method.

This comprises about all I want to say at this time. Here is an operation which is life-saving, and we must use it in these extreme or desperate cases if we would do the best for our patients.

DR. JAMES F. BALDWIN, of Columbus.—I was very much pleased with Dr. Murphy's classification of these inflammatory pelvic troubles, and it seems to me we can all agree with him. Even Dr. Price can agree with this classification. If we have a pelvic inflammation limited to the connective tissue, it will get well with drainage, and I would no more think of opening the abdomen in a case of that kind than of amputating an arm because there was a boil on it. If we have an abscess limited, as many of them are, to the cul-de-sac, surrounded by peritoneal adhesions, the tubes not being involved, the patient will get well if we open through the vagina and drain. When we have involve-

ment of the tubes, it is doubtful whether any particular patient will get well, though many of them may do so. We have all seen, in opening an appendicial abscess, the appendix sloughed off, and have washed it out or wiped it out with sponges. Or we have destruction of the mucous membrane of the appendix, and recovery will then ensue. But if it is not destroyed, then we may have trouble remaining. The incision will close, but we may have recurrence of trouble, and the patient may not get well until we remove the appendix.

Not all cases of pus tubes by any means come to operation. There are prostitutes in our cities by the thousand who have had pus tubes, but who were never operated upon, and who are symptomatically well. They have masses perhaps on each side, but if you operate on them you find hydrosalpinx. Nature takes care of pus under many conditions without surgical intervention. Fifteen years ago I had a patient with the largest lumbar abscess I ever saw. I aspirated, going down below into the thigh to make a valve opening, and drew off seven pints of pus; a few weeks later I removed five pints, and at the end of another few weeks I removed three pints. That was the end, and that woman is alive and well to-day. In that case there was a tubercular abscess communicating with dead bone and in connective tissue, but nature will take care of such abscesses in certain instances. So, in cases of pus tubes limited in extent of destruction, nature will take care of them, and they will get well without surgical intervention. I can recall a great many cases such as I have mentioned that are perfectly well to-day after vaginal incision —puerperal cases mostly, appendicial cases many of them; perhaps in none of them were the tubes deeply involved. I say to such patients when they come to me, You will perhaps have to come back in a few weeks or months for the purpose of undergoing a radical operation, but this operation will tide you over. I think I operate later on about one case out of every four.

Dr. Howard W. Longyear, of Detroit.—We have not touched one very important point in this discussion which was brought out in Dr. Price's paper—namely, drainage after abdominal section. I do not think Dr. Price was specific enough in his statements in regard to drainage. He did not say whether he drains in those cases in which he finds pus, or only in those cases where the pus has been spilled; or whether he drains because he finds certain kinds of pus or the patient manifests certain symptoms. As far as I am concerned, in my practice I drain less and less, because I am differentiating the kind of pus, if it is possible to make a pathological examination beforehand. If I have a case in which there has been high fever of long standing, I conclude that I have streptococcus infection, and in that case I know I must drain. If I do not drain, and the pus has been spilled, I know the patient will die. If there be infection from the colon bacillus, the staphylococcus or gonococcus, the peritoneum will take care of it very largely, in my experience. I have had cases

where pus has literally filled the pelvis from the rupture of a tubal abscess, the colon bacillus and staphylococcus being found in the contents of the abscess, and yet the patients have recovered without drainage. I wash out thoroughly with many gallons of normal salt solution, after which the abdomen is closed. If the infection is of the streptococcic type, it is a different matter entirely, and the more thoroughly we drain, the better.

In regard to vaginal incision for the drainage of pus in the pelvis, the ground has been very well covered. I thought Dr. Hayd's paper was admirable, and I agree with him almost entirely in his conclusions. We find occasionally an abscess in the pelvis, that points behind or at the side of the uterus or cervix, that is not tubal, and that is not due to infection from the uterus or tubes. Dr. Hayd mentioned that class of cases. I had such a case a short time ago. The woman had passed several renal calculi, with great pain, some three or four weeks before I saw her, and had had fever for about three weeks. She had a large mass in the right side, which apparently was an enlarged kidney. In this case the pain and tenderness radiated downward into the pelvis. In making a vaginal examination, for the first two or three days I could not distinguish fluctuation, but at the end of that time I made out a soft spot behind the cervix and a little to the left. It would have been foolish for me to have operated by the abdomen. I therefore made a vaginal incision and let out about three ounces of pus. I passed my finger *under* the peritoneum; I did not go through the peritoneum, but under it into the left pelvic tissue. This was a perirenal abscess, the pus passing down under the peritoneum into the pelvis, and illustrates one of the values of vaginal incision.

DR. PRICE (closing the discussion on his part).—I am satisfied some of the gentlemen who are so conservative will come back and repent; they will go home and get religion. I am very glad the subject of drainage was covered so completely, as it gives me a little wider scope for remarks.

After the scientific discussion of Dr. Murphy I feel like following him closely in this matter of drainage, because the papers and discussions hug the subject so snugly. Let us take the group of cases that have been drained. Drs. Douglas, Cartledge, myself, and, I believe, Dr. Bovée, have reported cases of multiple abscesses in the uterus itself. The surgeon remains in ignorance as to what exists until he can do his work in a scientific manner. In one case I found eleven abscesses in the body of the uterus, which I incised, drained the uterus, and saved the life of the patient. Dr. Cartledge has reported a group of such cases, also Dr. Bovée, and it is just that class of cases in which drainage is valuable, and when you evacuate and drain these abscesses scientifically you relieve suffering, you arrest infection; and it was in a similar group of cases that Pryor covered himself with so much glory in the post-puerperal infections. He opens the retroperitoneum or lymph spaces, washes out with salt solution,

and drains, and he has been very successful in a class of cases not referred to in this discussion.

Dr. Murphy alluded to cellulitis. There has been too little said from the drainage point of view. We find only a semblance of cellular tissue in the two leaflets of peritoneum forming the broad ligament. It is exceptional that we find an abscess there, but we will find lymphangitis involving the cervical and uterine tissues; and here again you may practise drainage and save the lives of patients, but you possess a refinement of diagnostic skill and ability that the men who deal with such a condition from above as yet have not claimed. Large accumulations do not exist unless you have large, puriform tubes as large as sweet potatoes or bananas. I have been in the abdomen, so to speak, thousands of times, and never found a broad ligament as large as the fat cushion on my hand.

Drainage—it is drainage that makes Murphy the world-famous surgeon that he is. Without it he would be in the same position as the rest of us. It is drainage that makes Deaver and Morris famous. Men without experience and judgment ought to drain frequently; while men with vast experience, such as Murphy, Deaver, and Morris, do not need to drain often.

Dr. Hayd (closing the discussion on his part).—The gentlemen who have discussed my paper do not differ from me very much, and I feel complimented that my essay should have developed such a free discussion. I did not come here with the expectation of having you believe that I was a vaginal hysterectomist, nor to have you believe that I would attack all disease from above. I believe that we should follow the work of intelligent men, who hold that certain pathological conditions can be best treated from below, and that other disease processes can be attacked to better advantage from above. I love to come here and extol the virtues of my old master and teacher, Joseph Price, and I always feel sorry if I cannot get on the rostrum and shout his praises high and low. I look upon Dr. Price as the greatest living exemplar of the art of surgery, but I look upon Murphy as the exemplar of both the art and science of surgery.

This is the whole topic of my paper. In it I tried to show, by reason of the bacteriological relationship which exists between certain bacteria and certain pathology, that certain surgical procedures should be instituted. Dr. Price, on the contrary, does not take that position. He contends that all pus should be attacked from above, irrespective of its virulence, whether the disease be gonorrheal or the result of a mixed infection—namely, streptococcus or staphylococcus infection. Unfortunately we do not often see the cases Dr. Murphy has called our attention to. Usually they are mixed infections, and I believe with Dr. Price that very, very seldom do we get broad-ligament phlegmons. But I don't care whether Dr. Price has done ten thousand operations or not, every man's experience is his own tutor and the best teacher he can get. I have had one

case where the broad ligament was as broad as the space between my hands, filled with pus, the tubes and ovaries being absolutely healthy, as the result of a post-puerperal infection.

Dr. Price compares appendicial disease with tubal disease. Neither physiologically, anatomically, nor clinically are the conditions alike. Different physiological elements enter into the construction of the different tissues, and just as Dr. Murphy, at the Toronto meeting of this association, held several years ago, said he would operate on a case of appendicitis *now*, not wait until to-morrow, I agree with him. But I do not say that I would operate upon a case of tubal disease until it defines itself, until I know what I am getting at, because these cases are not like cases of acute gangrene of the appendix with perforation and immediate death. They do not die suddenly; they linger on, and in the hope of relieving them of their serious aspect I first make a good incision in the vagina, and later, if the indications call for it, remove the diseased organs.

Some one referred to Kelly's cases—I forget who. Kelly's cases surprised me. They were not pelvic abscess cases. He was advocating vaginal incision in all cases of tubal and ovarian abscess, if possible, and he reported 36 cases where the women functionally got well, and some afterward bore children. I have never had such good luck, as I told you in my paper. In every case where I found an appreciable amount of pus, sooner or later I opened the abdomen, explored, and took out the tubes and ovaries.

DR. BRANHAM (closing the discussion on his part).—I dislike very much to detain the association for any considerable length of time, particularly after so many of the points have been thoroughly elucidated, there being not a great deal of difference, after all, in the observations and discussions of most of the speakers.

One thing struck me very forcibly, although my reasoning may possibly be faulty. Dr. Murphy, you will remember, gave us a very interesting talk about the pathology of these intrapelvic conditions, and he said that if we have a case of cellular abscess that occurs postpartum and open it up, and then drain, the patient will get well. But if the infection is in the mucous membrane or mucosa, the patient never gets well; in other words, that gonorrheal infection of the mucous membrane is never recovered from. If that were the case many men and women would be in a bad condition.

DR. MURPHY.—I believe I said that if we have gonorrheal pus tubes of the typical kind, complicated as it is by a stricture of the tube with closed or sealed fimbriæ, the patient will not get well by simply opening them and draining the tube through the vagina. If the pus tube has a stricture in it, I know there will not be complete recovery from incision and drainage.

DR. BRANHAM.—I know other organs that recover from gonor-

rheal stricture, and almost every textbook will tell us that in some cases the gonorrheal infection is comparatively mild.

DR. MURPHY.—I was speaking about a pus-infected mucosa, and not about stricture of the urethra.

DR. BRANHAM.—Gonorrhea in women frequently extends to the uterus and to the tubes, and yet these women get well in a short time without any treatment but rest. Of course, we may say that they are mild cases. Let us take the cases that are more severe. If we incise and drain, many of them will get well. I do not recall ever having seen a case of pus in other tubes, especially where it was confined to the lining membrane, where it was considered necessary to remove the organ in order to cure the abscess. I do not believe such treatment is rational. I believe a great deal of harm has been done by taking out tubes that could have been incised and drained with excellent results. Let them get well of themselves. If they do not get well, then operate by the abdomen or vagina, castrate the women, if nothing else will suffice.

I have done a good deal of abdominal surgery from time to time, and I do not want the Fellows to understand that I advise the vaginal operation in all cases. I have done a number of sections in the last year—over thirty—most of them for appendicitis. I have also operated for fibroid tumors and other growths. I have had the good fortune to lose only one bad case of appendicitis. In most of the cases the appendix was removed. I have done a great many operations by the vaginal route. I started by operating through the abdomen in all cases of pus in any part of the pelvis. I was taught to do so. I went abroad, saw the work of other gynecologists, and was convinced that in many cases operated upon by the abdominal route the results were not satisfactory. It is possible that I cannot do as good work in operating through the abdomen as I can through the vagina. It is here, I believe, where Dr. Price's teachings cause an immense amount of harm. We all know that he is a very successful abdominal operator, and he believes that his success should make us radical and that we should follow him. My own individual experience is that cases which are drained require secondary operation in about twenty per cent at the outside; the other eighty per cent are in better health afterward than those patients who have been castrated by having their ovaries and tubes taken out primarily. I have seen many of the women that have been operated on in a radical way, and have observed their miserable condition, with a chronic suppurating uterus and recurrent abscesses, in many cases eight or ten years after the primary operation. It seems to me, that incision and drainage would give as good a chance toward curing them as a more radical operation.

DR. WILLIAMS (closing the discussion).—I stated this morning that these discussions must be very confusing to the general practitioner. He hardly knows what course to pursue. I do not hesitate to say that I have been following the methods of

Dr. Price very largely. The last speaker referred to Dr. Price, saying that his teachings did a great deal of harm; that the men who followed him might not, and probably would not, have his ability to operate. But there is one thing that has driven gynecologists to vaginal procedures,—namely, the primary or remote results, the desire for offspring or the prevention of invalidism. If it is a question of mortality, I would express the opinion that it should not be any higher by the abdominal than by the vaginal route. That has been my experience in the last two or three years in being associated with Dr. Price. The acute or chronic cases do not die if a clean extirpation is done, with toilet and drainage. I see a large number of these cases at the Philadelphia dispensary. I see a great number of chronic cases, and I do not know how many acute cases, at this dispensary, probably twenty to forty cases a day of all kinds. I do not see many acute cases of gonorrheal abscess, although I am on the obstetric staff and see very many cases of chronic gonorrheal abscess. Many of the cases I have seen are brought in by their friends, bent over with pathology in the pelvis—sweating and fever. These cases are sent to Dr. Price to be operated upon, or I operate on them myself, and they do not die.

Dr. Bonifield.—Do you think the acute cases will go to the dispensary?

Dr. Williams.—It depends largely how narrow you draw the limit. I refer to cases that manifest the acute symptoms of intense pain and fever, that are up and about in a short time. Ninety per cent of the abscess cases are undoubtedly due to the gonorrheal virus. The case I referred to this morning, of a large abscess which bulged into the vagina, I should say would have been a good one for vaginal puncture, if you wish to use that method. There was a large bulging mass in the posterior cul-de-sac. That woman was ill from an acute infection of an old chronic trouble, and it would, in many instances, be difficult to say whether the woman was suffering from an acute abscess on one side, and not the other, unless one could see the pathology. I opened the abdomen of that woman and found four distinct abscesses within a fifth. If these abscess cavities are not opened and drained, if there is a focus left, fever and sweating will continue. If, in such a case, you simply incise and evacuate one abscess cavity, you are not going to do much good. All of the abscess cavities must be removed. I operated on this patient on the first of this month (September), and she went home yesterday (September 15).

The rest of the argument has been covered so fully by Dr. Price and others that there is very little to be said, except that the old chronic cases referred to as coming back after abdominal section are usually the result of incomplete operative procedures, as, for instance, the resection of half of an ovary or the part of a tube, and it is usually due to some local infection which should have been removed at the time of the primary operation.

A RÉSUMÉ OF THE RATIONALE AND THE TECHNIQUE OF BI-INGUINAL CELIOTOMY FOR COMPLICATED ASEPTIC RETROVERSIONS OF THE UTERUS; AND A FURTHER REPORT OF ITS REMOTE RESULTS.

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Rationale.—1. The reasons for surgical treatment of retroversio-flexion of the uterus without very formidable complications, constitute merely an *indicatio quoad valetudinem* and never an *indicatio quoad vitam.* Therefore the service which is thereby rendered the patient is relatively small or inferior in degree and does not warrant the surgical risk, worry, loss of time and expense incident to a major operation, unless such operation be not merely innocent of harmful results to future gestation and labor, but yield also a lifetime service to the patient in not permitting a return of the displacement after subsequent parturition.

2. The one only operation which has been proved to stand this double test of pregnancy, practically without exception, in a large number of cases, and to yield the more ideal results which this test implies, is that in which the round ligaments of the uterus are correctly traced, liberated, shortened, and anchored in an anatomically correct and thorough manner via their natural channels from without (not the operation or technique of Alexander, Kellogg, or Longyear). This operation has no real competitor, ten operators alone having eighty cases which have passed the crucial test of subsequent normal pregnancy without a return of displacement of the uterus in any, except two cases in which it was to be expected for good reasons. But a beginning in this the right direction was made by Wertheim (Vienna), who, after shortening round ligaments via the vagina, had seven out of eight cases pass the crucial test suc-

cessfully, but he had 20.7 per cent of recurrences of displacements otherwise independent of pregnancy; and the tenfold greater number of ventrosuspension operators have recorded only an aggregate of seven cases of this kind, examined after subsequent mature delivery, and four of them are failures.

3. The reason why the round ligaments of the uterus only, and none of the improvised artificial ligaments, can render the required service is because, while the latter can stretch to accommodate the maturely pregnant uterus, they cannot retract, but must remain long and therefore useless after labor; and that these idle pathological bands are not innocent is shown by at least fifteen cases of ileus, usually fatal, that were directly caused by those bands. The round ligaments, on the contrary, being a part of the muscular apparatus of the uterus itself, not only grow with it during every gestation, so that they become palpable through the abdominal wall at term, but they also undergo involution with the uterus after labor and thus resume their former function. Several German observers have noted that when normal gestation and delivery follow in a case of inguinal shortening of the round ligaments, they become rather shorter and stronger, probably through the incidental muscular activity *(Arbeitshypertrophie)*; and observation of my eleven cases of that kind tends to confirm that opinion.

4. The reasons for choosing the inguinal route, specifically, to operate upon these ligaments, are that their weakest spots, where the stretching occurs, are at their insertion in the abdominal wall, where they are often very slender and soon become frayed out in the inguinal canals. A useful shortening of these ligaments, one that at the same time strengthens them, implies an elimination of these weakest portions, and that can be done only by the inguinal canals from without; because the vulnerable parts are not accessible via the vaginal and ventral routes, and all shortening of these ligaments by doubling-up of their thicker and proximal portions is both irrational and unstable.

5. The greatly superior results of this operation indicate that it should be chosen not merely for the small number of unimportant cases of uncomplicated retroversion, but that the much larger number of aseptic cases with adhesions or degenerate conditions of the appendages should also be given the benefit of this procedure. For there is a large class of retroversions with complications which are the result of an inflammatory process in which the infectious agent has died out. Adhesions thus

resulting are commonly liberated, by all considerate operators, through a small incision by touch alone, without sight, by both the vaginal and ventral routes. After the adnexa have been thus liberated by those routes, they are drawn near to or into the entrance wound, if necessary, and inspected, resected, or removed. The same thing can be done as intelligently and thoroughly by bi-inguinal celiotomy via the inguinal canals and the dilated lateral femoral rings, without cutting any tissues, aside from the skin and subcutaneous fat down to the aponeurosis of the external abdominal oblique muscle. These inguinal rings are readily found by following the round ligaments, and they usually admit one finger very readily and can be stretched enough for two fingers. But, as the normal location of the ovary and ampulla of the tube beneath or back of it is nearly on a line running directly backward from the ring and not far from it, it is clear that the respective ovary and tube can be drawn into a smaller opening and treated, in that part of the abdominal wall, than would be required near the linea alba or via the vagina to make the same organs equally accessible for the same treatment.

6. Introduction of an index finger through the lateral inguinal ring on each side should be practised as an important supplementary act in connection with every so-called Alexander operation, in all supposedly simple cases: (*a*) to detect obscure adhesions of appendages, chiefly, that were not discovered previously. (*b*) To find out degenerate conditions of these parts, such as closed tubes, follicle cysts, or cirrhotic portions of ovaries, which cannot be certainly recognized by bimanual palpation, and which if not corrected would greatly reduce the good which the operation might otherwise have done. (*c*) To be able to know whether the round ligament in each wound has been sufficiently liberated from the broad ligament, so that traction upon it imparts a direct forward impulse to the fundus uteri or pulls upon the broad ligament at a variable distance from the uterus, without directly influencing the latter at all. The latter condition is the case in about every fourth or fifth individual wound, even in simple uncomplicated retroversions after the round ligament has been apparently drawn out as far as it can be made to come by extraperitoneal traction and dissection. It is clear that by merely pulling upon the broad ligament at some distance away from the uterus, the shortened round ligament cannot very well prevent a return of retroversion when the fundus uteri is heavy

or is bent over backward. It is only by introducing the index finger through the ring against the uterus and then pulling upon the round ligament that this condition can be detected, and also corrected by carefully freeing the round ligament sufficiently from the broad ligament and then testing again, so that thorough work and not merely a blind sham may be produced—such as has resulted in very discreditable recurrences of retroversion in cases treated upon the ephemeral design and shallow technique that are advocated and practised on this subject by Kellogg and a few others. In a thorough operation the round ligaments are given a most positive and useful function by being thus really shortened (with the incidental elimination of their useless weaker portion) and by being changed in their course from a more lateral to a nearly forward direction. Whether they have previously had or have exercised any similar function or not in any given case is of no significance whatsoever. The supervention of hernia is positively prevented by the application of a reasonable degree of care and common sense to the abundance of normal tissues which are always available for the very freest use to that end.

Technique.—An incision varying from five to seven centimetres in length, according to the amount of adipose tissue, is made one centimetre above and parallel to Poupart's ligament, beginning near to the pubic spine, and down to but never into the aponeurosis of the external abdominal oblique muscle. The median or superficial inguinal ring is very carefully exposed, best by rubbing with a gauze sponge toward the median line.

Sometimes this ring is obscure and other similar and adjacent triangular clefts in the aponeurosis, emitting vessels and nerves, are easily mistaken for it. When this occurs it is a particular misfortune, because the correct or actual ring, and particularly the bunch of fat protruding from it mostly in conjunction with the ileo-inguinal nerve, practically always contains the terminal portions of the round ligament and should be carefully caught in a small forceps. With or without cutting a few crossing fibres at the lateral acute angle of this ring, the aponeurosis is split from that angle outward about four to five centimetres, entirely without cutting, and its edges are held apart, together with those of the superficial tissues, by retractors. From the floor of the inguinal canal thus exposed, the round ligament is gathered up, beginning with the bunch of fat caught in the forceps. It is seen first as a slender band of muscle tissue containing some

vessels. Further inward, nearer the peritoneal investment, it usually has a slender tendinous appearance, especially when drawn upon. Its attachments to the internal oblique and transversalis muscles are severed very carefully until the apex of the peritoneal investment appears drawn up into the wound. This it is best to incise on the lateral side, not too near the ligament, with scissors, in order to obtain clean-cut edges into the peritoneum for the finger to follow, which otherwise easily passes in between the layers of the broad ligament instead of into the peritoneal cavity. With the ligament constantly drawn upon, the peritoneum (broad ligament) is now, by cutting and by traction, severed from the round ligament at a variable distance from it, so as to leave a strip of the most firmly attached peritoneum to reinforce the round ligament, which in that manner can always be developed strongly enough to serve the desired purpose. An index finger is now inserted into the posterior cul-de-sac to sever adhesions of the uterus whenever there are any. And from there it is passed along the upper or posterior surface of the broad ligament, and behind the ovarian ligament and the tube outward, until the ovary and ampulla of the tube are reached and liberated from adhesions which occur there chiefly. Both uterus, and tube and ovary of one side at least, being now free, come forward readily; the tube appears in the wound almost voluntarily, and, after drawing out its end, the ovary usually soon follows. Rarely its attachments will require to be drawn upon, or the ring to be stretched a little, in order to allow the ovary to pass out; and when it tends to slip back it is readily held by a curved pedicle forceps caught upon the tendinous utero-ovarian ligament. Enucleation of the follicle cysts, or resection of the ovary, or salpingostomy, is then more conveniently performed than from any other approach to the parts,[1] and when their joint lateral support allows them to hang too low it will also allow them to advance equally far out of the wound, and can be shortened by uniting the edge of the web that extends from the ovary toward the end of the tube, at about its middle, by one or two silk sutures to the side or edge of the infundibulo-pelvic ligament where this emerges from the wound while stretched.

Each wound is closed carefully in four layers of sutures and

[1]For my indications and technique of salpingostomy and resection of ovaries see Jour. Amer. Med. Assoc., August 24, 1901, and American Journal of Obstetrics, vol. xliv., No. 5, 1901, and vol. xlvi., No. 4.

after the general plan of the Bassini hernia operation. The first layer consists of a pursestring suture that catches the edge of the round ligament drawn out *ad maximum* and the edges of the ring with the peritoneum. The second tier of sutures is the most important of all. In it the internal oblique and transversalis muscles are in part drawn down into the inguinal canal and sutured to the posterior surface of Poupart's ligament, and the round ligament is sandwiched in between these two, for a distance of four to six centimetres, by the same sutures. To do this the posterior surface of Poupart's ligament is made accessible for this suturing by turning the lower edge of the split wound in the aponeurosis of the external oblique muscle down, or down and forward, by means of a broad-mouthed pedicle forceps. A continuous double thread is used in this important layer, and before the round ligament itself is caught two or three good rolls of muscle, from the muscles mentioned, are drawn down over the closed ring and anchored laterally from the round ligament. After that the round ligament is caught upon the needle in the four to six succeeding stitches, but never without a good roll of vascular and elastic muscle tissue being first hooked upon the needle to prevent excessive constriction of the ligament. At about every second stitch the needle is passed under the thread to prevent unfastening and to secure even tension. Thus three important things are secured in this layer of sutures: (1) firm closure of the inguinal canal; (2) a broad attachment of the round ligament to an unyielding fixation point; (3) a guarantee against cutting off the necessary circulation in the ligament, which would certainly occur if the ligament were caught alone in the sutures. The third tier of sutures consists simply in coaptating the edges of the aponeurosis, formerly split open. These fall together as they are liberated, and demonstrate nicely that all structures which have a holding capacity have been preserved for use to guard against hernia. For these three tiers of buried sutures catgut only is used. In the fourth layer the skin and subcutaneous fat are united by silkworm gut, either continuously or interruptedly. Drainage is never needed, as the several tiers of sutures are united to each other enough to prevent accumulation of serum or blood between them.

Cases.—The present collection of my cases of 1900 and 1901, not heretofore reported, comprise 34 which could be traced, and have each been carefully examined by myself or by one of three other gynecologists. Seven cases were not available for examina-

tion, and they have been therefore omitted entirely, although 4 of them are known to be in good health. The dates of operation and examination are given, together with the anatomical findings at both times in each case, and the subjective status. The average length of time between operation and examination is 16⅝ months. Of these 34 cases, 9 presented adhesions of both uterus and ovaries, and 11 others had such of the adnexa alone of one or both sides. In two cases of severe fixation two fingers were introduced on one side, and in one of these a thick curved dilating sound was introduced into the uterus to steady it during its liberation. In 10 cases both ovaries were resected. In 12 others the right ovary was resected and the left one removed along with the tube. Resection of the left ovary and removal of the right one was done in 3 cases. Resection of the right ovary alone was done in 3 cases, and removal of the right ovary alone in 2 cases; while removal of the left one alone occurred once. Suspension of one ovary was made once and of both ovaries also once. Salpingostomy was performed on one tube in two instances, and on both tubes in one case. There was not one simple case, uncomplicated by either adhesions or degenerate conditions in adnexa, that did not require intraperitoneal treatment. The Schröder operation for pathologic cervix was performed in 5 cases and the Emmet operation once. My intrapelvic, infravaginal perineorrhaphy was performed in 10 cases, and hemorrhoids were removed by thermo-cautery twice. In one case a small parovarian cyst was extirpated through the dilated inguinal ring without difficulty. Among these 34 patients no childbirth has occurred during the period of time they have so far been observed; 9 were single and remained so at the time of the reviewing examination. Of these 34 patients, 29 are now in good pelvic and general health, but in two of them hysterectomy has been performed because of insufficient relief afforded by the previous conservative operation. Two others required intrauterine irrigation, iodine and local galvanic treatment of tender ovaries, before getting well. The remaining 7 cases were able to attend to their regular duties most of the time, but are somewhat ailing, some of them from endometritis, due in 3 cases to a reinfection, others from chronic parametritis and one from renal insufficiency.

I have heretofore made a report, similar to this one, of 49 cases before the International Congress of Obstetricians and

Gynecologists at Amsterdam in 1899,[1] and of 22 cases before the meeting of this association at Louisville, Ky., in 1900.[2] In this aggregation of 105 cases one death has occurred that is ascribable to the bi-inguinal operation. In one single instance a return of retroversion was found of sufficient degree to require the use of a pessary. This has never been advised in any other case after the operation. *No hernia occurred in any case,* aside from a weakness or predisposition to one in one case that slid down an entire icy stairway on her buttocks five weeks after operation.

The operation has certainly been innocent of unfavorable effects upon gestation and labor. Seventeen cases of conception are known to me among my cases. Only four abortions have become known in these 105 cases during the time they were under observation, and three of these were confessedly induced, leaving only one as spontaneous. Eleven cases went to term normally, and all had normal deliveries, except one with a breech presentation. In every one of these a uterus well involuted and in pronounced anteversion was retained. Two other cases are near the end of an uneventful gestation period.

[1]American Journal of Obstetrics, vol. xlii., No. 5, 1900.
[2]Ibid., vol. xlii., No. 5, 1900.

Case number. Age. Para (?). Occupation.	Anatomical diagnosis at time of operation.	Operations performed in addition to shortening and anchoring the round ligaments via the inguinal canals. Date of same.
1. 24 years. Nullipara and abortion Laboring housewife.	Puerperal endometritis and metritis. Mobile retroversion Large cystic descended ovaries.	January 18, 1900. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries.
2. 33 years old. Multipara. Widow. Runs grocery store.	Metritic, retroverted uterus. Both ovaries cystic. Right hydrosalpinx. All densely adherent. Lacerated perineum.	January 19, 1900. Curetment. Intrapelvic, infravaginal perineorrhaphy. Bilateral inguinal celiotomy. Liberation of uterus and left adnexa. Removal of right ovary. Resection of left ovary.
3. 22 years old. Multipara. Barber's wife.	Retroverted, metritic uterus Multicystic adherent ovaries.	February 1, 1900. Curetment. Bilateral inguinal celiotomy. Liberation and resection of both ovaries.
4. 35 years old. Single. Nullipara. Dressmaker.	Extreme retroversion. Movable cystic and cirrhotic ovaries markedly descended. Endometritis.	April 9, 1900. Curetment. Bilateral inguinal celiotomy. Removal of left ovary. Resection of right ovary.
5. Age 24 years. Multipara. Working housewife.	Mobile retroversion. Endometritis. Cystic ovaries Adnexa adherent.	April 12, 1900. Curetment. Bilateral inguinal celiotomy. Removal of left ovary and tube. Resection and liberation of right ovary.
6. Age 35 years. Multipara. Working housewife.	Severely adherent and metritic uterus. Ovaries walled over by extensive adhesions to rectum and cul-de-sac.	April 17, 1900. Curetment. Bilateral inguinal celiotomy. Difficult, but complete liberation of uterus and appendages, assisted by thick, curved sound in the uterus and use of two fingers in one of the inguinal wounds. Removal of right ovary and tube.

Nature of convalescence after operation.	Date of last examination. Position and condition of pelvic organs, objectively considered.	Patient's subjective condition, and treatment received.	Other concomitant disorders, and remarks.
Uneventful. Complete primary union.	August 6, 1902. Uterus and ovaries in good normal position, but endometritis and dysmenorrhea since a reinfection. Curetment needed.	Patient suffering from new gonorrheal infection and rheumatic conditions.	Peculiar ridges of cicatricial tissues in line of inguinal scars, said to be tender and sometimes painful.
Normal, and primary union complete.	August 17, 1902. Uterus normally anteverted and in healthy condition. Both ovarian regions negative and painless. Little relaxation of pelvic floor, drawing cervix toward vulva.	Menses normal, with little pain first day. Some dyspepsia. Is strong and working hard in her own grocery daily.	
Some temperature, but otherwise normal. Primary union.	August 15, 1902 Normal uterus and adnexa in ideal position.	Menses normal and painless. Great gain in weight. General health very good. Working hard.	
Smooth. Complete primary union.	August 6, 1902. Uterus and ovary in condition. No pain.	Menses sometimes delayed and then profuse. General health good. Gained weight from 117 to 140 pounds.	Patient required several intrauterine applications of chloride of zinc a couple of months after operation, to control menorrhagia.
Uneventful. Primary union.	August 10, 1902. Ideal condition and position of all organs.	Menses painless and normal. General health perfect.	Patient also received several extrauterine applications of tincture of iodine.
With considerable temperature for several days, and slight suppuration in one wound.	January 31, 1901. Abdominal total hysterectomy, and with removal of left pyosalpinx and ovarian abscess (free pus) on account of a reinfection. Subsequently vaginal extirpation of broad-ligament cyst.	Patient had recovered fair health previous to reinfection, and now is in good health, after third operation.	

Case number. Age. Para (?). Occupation.	Anatomical diagnosis at time of operation.	Operations performed in addition to shortening and anchoring the round ligaments via the inguinal canals. Date of same.
7. Age 30 years. IIIpara + two abortions. Laboring housewife.	Mobile retroversion, with severe endometritis. Both ovaries cystic and much descended. Lacerated perineum.	June 4, 1900. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries. Intrapelvic, infravaginal perineorrhaphy.
8. Age 24 years. Virgin. Nurse.	Extreme retroversion and endometritis. Cystic ovaries. Anemia and renal insufficiency.	July 5, 1900. Curetment (without cauterization). Bilateral inguinal celiotomy. Resection of both ovaries, right one slightly.
9. Age 38 years. Multipara. Laborer's wife.	Adherent retroversion. Endometritis. Left ovary cirrhotic; right ovary cystic. Lacerated perineum.	August 4, 1900. Curetment. Bilateral inguinal celiotomy. Removal of left tube and ovary. Resection and liberation of right ovary. Intrapelvic, infravaginal perineorrhaphy.
10. Age 29 years. IVpara + one abortion. Working housewife.	Extreme retroversion, movable. Endometritis. Severe menorrhagia. Right ovary cystic and adherent with tube; left ovary cirrhotic, movable. Lacerated perineum.	September 24, 1900. Curetment. Bilateral inguinal celiotomy. Left ovary and tube removed, right ovary resected and liberated. Intrapelvic, infravaginal perineorrhaphy.
11. Age 27 years. Virgin. Domestic.	Uterus large; in marked retroversion; mobile. Excoriated external os. Left ovary normal, but a parovarian cyst size of walnut near it; right ovary with corpus luteum and other cysts.	September 24, 1900. Curetment. Bilateral inguinal celiotomy. Resection of right ovary. Removal of left parovarian cyst.
12. Age 33 years. Vpara. Working housewife.	Subinvoluted, large, friable uterus in extreme retroversion, mobile. Left ovary cirrhotic; right ovary with large corpus luteum and other cysts.	October 9, 1900. Curetment. Bilateral inguinal celiotomy. Removal of left ovary and tube. Resection of right ovary.

Nature of convalescence after operation.	Date of last examination. Position and condition of pelvic organs, objectively considered.	Patient's subjective condition, and treatment received.	Other concomitant disorders, and remarks.
Primary union, but much nervousness	August 6, 1902. Uterus and ovaries in good position; the latter normal and painless, but uterus large and tender	Menses painful and excessive. Curetment needed.	Has also some dyspepsia, anemia, and neurasthenic status.
Primary union, but some temperature. Much spinal and occipital pain, and later hysterical symptoms.	June 1, 1902. Uterus and ovaries in normal position, but uterus and left ovary quite tender.	Menses excessive, with pain in left ovary. Leucorrhea constantly. Needs another curetment.	Has decided renal insufficiency, with severe periodical headaches and fainting spells, but has gained in weight and works hard as trained nurse most of time.
Stitch abscess on one wound. Otherwise normal recovery.	July 30, 1902. Position and condition of uterus ideal. Adnexa sensitive.	Amenorrhea since last six months. General health excellent. and working hard.	
Hysterical first day. Afebrile course. Perfect primary union.	July 30, 1902. Position and condition of ovaries very good. Perineum a little relaxed again.	Menses scant but painless. Complains of general nervousness.	
Normal. Primary union.	August 4, 1902. Normal position and condition of uterus and adnexa.	Occasional intercostal neuralgia. Menses scant but painless. Gain in flesh. Good general health.	
Uneventful until nineteenth day. Patient sat up and walked. Felt sudden pain in pelvis; fainted, and slight chill. Pulse rapid and temperature 102°. Painful swelling and induration, deep in both wounds, from secondary hemorrhage from some stump. Wounds opened and healing by granulation. Anteversion of uterus retained.	May 11, 1901. Normal position and condition of right ovary. No tenderness.	Some occasional pain and tenderness on left side from stump of removed adnexa. Great improvement in general nutrition. Menses three days and normal.	

Case number. Age. Para (?). Occupation.	Anatomical diagnosis at time of operation.	Operations performed in addition to shortening and anchoring the round ligaments via the inguinal canals. Date of same.
13. Age 20 years. Virgin. Domestic.	Small catarrhal uterus in mobile retroversion. Narrow, contracted vagina. Left ovary large, cystic, and adherent; very low down. Compression excites her. Constant lumbar and sciatic pain.	October 20, 1900. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries after liberation of left ovary.
14. Age 33 years. Nullipara. Dressmaker.	Extreme retroversion, movable. Catarrhal endometritis. Left ovary cirrhotic: right ovary. follicular cystic. Neurasthenic. Severely hysterical. Drug habit.	November 11, 1900. Curetment. Bilateral inguinal celiotomy. Removal of left ovary and tube. Resection of right ovary. Round ligaments firmly held in broad ligaments.
15. Age 37 years. IIIpara + five abortions. Working housewife.	Severely metritic uterus extremely retroverted Right ovary cystic; left ovary cirrhotic. Lacerated perineum. Cf. "treatment received" column.	December 11, 1900. Curetment. Bilateral inguinal celiotomy. Removal of left tube and ovary. Resection of right ovary. Intrapelvic, infravaginal perineorrhaphy.
16. Age 24 years. IIpara + two abortions. Working housewife.	Metritic, retroverted uterus. Left ovary cirrhotic, descended, very adherent and tender; right ovary cystic. Lacerated perineum. Valvular heart lesions.	January 12, 1901. Curetment. Bilateral inguinal celiotomy. Removal of left tube and ovary. Resection of right ovary. Intrapelvic, infravaginal perineorrhaphy.
17. Age 36 years. Ipara. Lady housewife.	Large metritic uterus, extremely retroflexed and severely adherent, along with extremely descended right ovary and ampulla of tube against cervix. Right ovary composed of serous and bloody cysts chiefly. Left tube and ovary also adherent and cirrhotic. Lacerated perineum.	February 4, 1901. Curetment. Bilateral inguinal celiotomy. Difficult but perfect freeing of uterus and appendages. Removal of right tube and ovary. Inspection of left ovary and tube. Intrapelvic, infravaginal perineorrhaphy.
18. Age 20 years. Virgin. Schoolgirl.	Extremely retroverted uterus, movable. Descended cystic left ovary. Hematoma of right ovary, size of hen's egg. Catarrhal endometritis.	March 1, 1901. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries and suspension of right ovary.

Nature of convalescence after operation.	Date of last examination. Position and condition of pelvic organs, objectively considered.	Patient's subjective condition, and treatment received.	Other concomitant disorders, and remarks.
Smooth. Primary union.	August 18, 1902. (Dr. R. N. Rice.) Uterus anteverted. Some tenderness on left side.	Menses scant, with some dysmenorrhea. General health good.	
Afebrile. Primary union. Some nervousness.	May 21, 1902. Uterus still large and tender. Right ovary tender. Both in very good position. Marked tenderness of left stumps.	Complains of pain there. Has continued former drug habits. Is markedly hysterical and neurasthenic	Abdominal total hysterectomy. Drug habit stopped in hospital, and subjectively well when dismissed.
Afebrile. Perfect primary union. Little bladder irritation.	July 29, 1902. Large metritic, tender uterus in complete anteversion, not descended. Ovary negative.	Excessive menses, with pain in uterus. Much intercostal neuralgia and paroxysms of pain in region of solar plexus, but has gained in weight. Patient had elsewhere curetment and trachelorrhaphy five months previously without noticeable benefit.	
Complete primary union. Some bronchitis.	September 12, 1902. Uterus and ovaries in good condition, aside from a little cervical catarrh.	Nervousness at menstrual periods. General health good.	
Afebrile course. Perfect primary union. Was up in twelve days and home in seventeen days.	August 12, 1903. (Dr. Barnard.) Normal position and condition of uterus and ovary.	Menses regular and painless. Leucorrhea at times. No other symptoms. Good general health and increase in weight.	
Primary union. Afebrile. but much nervousness.	July 25, 1902. Position and condition of organs ideal.	Menses two days; painless. General health good.	But was feeble and quite hysterical for a year after operation.

Case number. Age. Para (?). Occupation.	Anatomical diagnosis at time of operation.	Operations performed in addition to shortening and anchoring the round ligaments via the inguinal canals. Date of same.
19. Age 30 years. Ipara. Teamster's wife.	Endometritis and metritis. Uterus retroverted and very tender. Right ovary enlarged, descended and cystic; left ovary cirrhotic. Pathological cervix.	March 4, 1901. Curetment. Bilateral inguinal celiotomy. Removal of left ovary. Resection of right ovary. Schröder cervix amputation.
20. Age 31 years. Ipara. Barber's wife.	Adherent, retroverted, metritic uterus, with pathologic laceration of cervix. Right ovary cystic, tender, and painful; left ovary less so. Hemorrhoids.	April 8, 1901. Curetment. Schröder cervix amputation. Bilateral inguinal celiotomy. Liberation of uterus. Removal of right ovary and tube. Resection of left ovary. Removed three hemorrhoids by cautery.
21. Age 19 years. Virgin. Telephone operator.	Extreme retroversion. Movable catarrhal cervix. Cystic, descended, and tender ovaries.	April 15, 1901. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries.
22. Age 22 years. Virgin. Domestic.	Catarrhal endometritis. Movable retroversion. Left subacute salpingitis and ovaritis. Parts very adherent.	April 20, 1901. Curetment. Bilateral inguinal celiotomy. Removal of left tube and ovary with difficulty. Parts extremely adherent.

Nature of convalescence after operation.	Date of last examination. Position and condition of pelvic organs, objectively considered.	Patient's subjective condition, and treatment received.	Other concomitant disorders, and remarks.
Extremely smooth course. Perfect primary union.	September 6, 1902. Uterus reduced in size, not tender. In excellent position. Adnexa negative.	Menses normal and painless. Best of general health. Gained much in weight.	
Afebrile course. Complete primary union.	September 1, 1902. Uterus in good position, and now also small and not tender. Left resected ovary likewise.	Is now in good health, but was treated for lingering metritis and persistent tenderness of left ovary and parametritis for six months with galvanism, massage, and glycerin tamponade.	
Afebrile after twenty-four hours. Primary union throughout. Almost no pain.	August 8, 1902. Uterus and ovaries in excellent position and normal condition physically.	Occasional pain in left ovarian region during her constant sitting employment at telephone. Menses normal, general health good.	
Patient in good condition four and a half hours, then signs of internal hemorrhage. Secondary laparatomy. Evacuated much blood. Clamped bleeding left broad ligament and ligated same by mass sutures, stopping hemorrhage. Patient rallied upon much stimulation, but pulse and temperature rose rapidly until death occurred, twenty hours after operation, as from acute sepsis. Bleeding occurred from slipping of ligature from stump, owing to inclusion of tissues from parietal wound in the ligature of stump.			

Case number. Age. Para (?). Occupation.	Anatomical diagnosis at time of operation.	Operations performed in addition to shortening and anchoring the round ligaments via the inguinal canals. Date of same.
23. Age 28 years. Virgin. Seamstress.	Mobile retroversion and descensus of uterus. Large cystic ovaries. Endometritis. Dyspeptic, emaciated, and nervous. Severe dysmenorrhea.	April 28, 1901. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries.
24. Age 30 years. IIpara + one abortion. Laborer's wife.	Endometritis. Uterus retroverted and retracted. Adnexa adherent. Lacerated perineum.	June 28, 1901. Curetment. Bilateral inguinal celiotomy. Liberation of adnexa. Removal of left tube and ovary. Resection of right ovary. Intrapelvic, infravaginal perineorrhaphy.
25. Age 35 years. Ipara. Housewife.	Mobile retroversion. Metritis. Pathologic cervix. Lacerated perineum. Cystic ovaries.	July 11, 1901. Curetment. Bilateral inguinal celiotomy. Resection of both ovaries. Both tubes and ovaries distinctly adherent. Some fluid in pelvic cavity. Schröder's cervix amputation. Intrapelvic, infravaginal perineorrhaphy.
26. Age 22 years. Nullipara. Laboring housewife.	Severely adherent retroversion. Adherent right ovary and tube. Extreme descensus of left ovary. Menorrhagia. Sterility.	July 16, 1901. Curetment. Bilateral inguinal celiotomy. Difficult but complete liberation of all parts by two fingers in one side. Removal of left tube and ovary. Left salpingostomy. Free bleeding from raw surfaces. Packing short time.
27. Age 34 years. IIpara + two abortions. Widow. Washerwoman.	Severe metritis. Lacerated cervix. Adherent retroversion. Cystic ovaries.	August 30, 1901. Curetment. Bilateral inguinal celiotomy. Liberation of uterus. Resection of right ovary. Emmet cervix operation. Removal of left tube and ovary.
28. Age 36 years. Ipara + two abortions. Housewife.	Severe chronic metritis (fibrosis uteri). Adherent retroversion. Severe fixation of adnexa.	October 25, 1901. Curetment Amputation of cervix. Bilateral inguinal celiotomy. Complete liberation of all parts. Opening of both tube ostia out of very firm adhesions Resection of both ovaries.

Nature of convalescence after operation.	Date of last examination. Position and condition of pelvic organs, objectively considered.	Patient's subjective condition, and treatment received.	Other concomitant disorders, and remarks.
Afebrile. Comfortable and perfect primary union.	August 18, 1902. Position and condition of uterus and ovaries now normal.	Slight dysmenorrhea still General health and strength good, but patient required five or six intrauterine applications. Tincture of iodine to overcome dysmenorrhea since operation.	
Nearly afebrile course. Entire primary union.	June 1, 1902. (Dr. Barnard.) Position and condition of organs very good.	Menses normal, painless. Good general health.	
Smooth, complete primary union.	July 31, 1902. Uterus and adnexa in normal position and condition.	Menses little, scant, but painless. Robust general health.	
Maximum temperature 102°. Slow pulse. Primary union.	August 15, 1902. (Dr. Barnard.) Position and condition of organs normal.	Menses regular and without discomfort. Perfect general health.	
Comfortable. Normal. Perfect primary union.	August 1, 1902. Uterus remains large, but in good position. Marked metritis. Left femoral hernia has developed.	Menses profuse and painful. August 1, 1902, curetment. High amputation of cervix and femoral hernia operation.	
Smooth course. Good primary union. Very comfortable.	August 10, 1902. (Dr. Barnard.) Position and condition of organs normal on careful examination.	Has intervals of four or five months amenorrhea without discomfort. General health good.	

Case number. Age. Para (?) Occupation.	Anatomical diagnosis at time of operation.	Operations performed in addition to shortening and anchoring the round ligaments via the inguinal canals. Date of same.
29. Age 22 years. Nullipara. Clerk.	Endometritis. Retroversion. Left ovary cystic, size of small hen's egg; right ovary normal, but adherent. Right floating kidney.	November 19, 1901. Curetment. Bilateral inguinal celiotomy. Resection of left ovary and suspension of same. Right ovary liberated.
30. Age 32 years. IIIpara + three abortions. Laborer's wife.	Metritis. Retroversion. Pathologic cervix. Ovaries normal, but adherent. Lacerated perineum.	November 19, 1901. Curetment. Amputation of cervix. Intrapelvic, infravaginal perineorrhaphy. Bilateral inguinal celiotomy. Liberation of adnexa.
31. Age 27 years Vpara. Laborer's wife.	Large metritic uterus. Adherent retroversion. Both tubes and ovaries adherent. Left ovary sclerocystic, right ovary cystic. Lacerated perineum. Hemorrhoids.	December 2, 1901. Curetment. Intrapelvic, infravaginal perineorrhaphy. Bilateral inguinal celiotomy. Liberation of organs. Removal of left tube and ovary. Resection of right ovary. Removal (by cautery) of three hemorrhoids.
32. Age 25 years Nullipara. Housewife.	Anteflexed uterus in mobile retroversion. Retracted posterior vaginal wall. Cystic left ovary.	December 9, 1901. Curetment. Bilateral inguinal celiotomy. Resection of left ovary.
33. Age 24 years. IIpara. Housewife.	Endometritis, metritis. Retroversion. Left ovary large. Corpus luteum cyst.	December 16, 1901. Curetment. Bilateral inguinal celiotomy. Resection of left ovary.
34. Age 32 years. Ipara. Housewife.	Metritic, retroverted uterus. Appendages severely adherent. Left tube a hydrosalpinx. Cystic ovaries. Movable right kidney.	December 6, 1901. Curetment. Bilateral inguinal celiotomy. Liberation of adnexa. Resection of left ovary. Amputation and salpingostomy on left tube stump. Removal of right ovary and tube.

Nature of convalescence after operation.	Date of last examination. Position and condition of pelvic organs, objectively considered.	Patient's subjective condition, and treatment received.	Other concomitant disorders, and remarks.
Normal. Primary union.	August 19, 1902. Position and condition of uterus and ovaries normal. Has extreme descensus of both kidneys.	Menses regular, but somewhat scant, and painful one to two hours before flow appears. August 26, 1902: Bilateral nephrorrhaphy.	
Uneventful. Primary union.	June 1, 1902. (Dr Barnard.) Position and condition of organs normal	Menses regular and painless. Occasional bladder symptoms. General health much improved; good now.	
Aseptic primary union. Normal course.	June 1, 1902. Uterus in good position, but too tender bimanually. Right ovary tender, source of right-side pain most of time.	Patient anemic and neurotic.	
Very smooth, afebrile. Primary union.	September 1, 1902. Uterus and left ovary in normal position and condition.	Recently pain in right ovary. Subsided after four applications of vaginal galvanism. General health good. Menses normal and nearly always painless.	
Afebrile, but much nervousness. Primary union.	September 1, 1902. All organs in good position. Little tenderness of one ovary.	Little pain at menses. Some nervousness, but fair general health.	
Some temperature and stitch abscess. Otherwise normal.	August 8, 1902. (Dr Barnard.) Position and condition of uterus and ovary normal.	Menses regular, painless. Has occasional symptoms from right kidney. Otherwise in good health. Working regularly.	

DISCUSSION.

DR. HERMAN E. HAYD, of Buffalo.—This paper is very interesting to me, as are all of the papers that have been read on this subject by Dr. Goldspohn. But the author's personality has interested me still more. I see in him the gradual evolution of a man from a simple Alexander-operationist to a bi-inguinal-celiotomist. I feel that such a change is unfortunate. Just as the vaginal-hysterectomist differs from the man who believes in vaginal incision and opening of the cul-de-sac to drain pus collections, so we who believe in and perform the Alexander operation differ from Dr. Goldspohn. He removes growths and abscesses and does all kinds of surgery through the inguinal canals; in fact, Dr. Goldspohn shows by his paper and thought that he is prepared to do practically all kinds of pelvic surgery through the inguinal rings. I take the position that his ground is untenable. However, that does not lessen my interest in the discussion of the treatment of retroversion of the uterus. Of course, unless I misapprehend the real situation, we all agree, if we have a simple, uncomplicated case of retroversion of the uterus, that an Alexander operation is indicated. On the other hand, if we have to deal with a complicated retroversion, where the uterus is either fixed or bound down, with or without tubal and ovarian disease—for example, appendicitis, intraligamentary cysts, dermoid cysts, or any complication which may exist in such a pelvis —a different procedure must be adopted. The Alexander operation was intended for simple, uncomplicated retrodeviations of the uterus, in which the organ is perfectly movable and the tubes and ovaries healthy.

A question suggested to my mind may be formulated thus: Is it possible for you and for me, men with a reasonable amount of intelligence and experience, to diagnosticate an uncomplicated retroversion of the uterus? From my viewpoint I answer, it is. If it is, then I present a simple operation for its relief, namely, the Alexander operation, without mortality, without danger, and one easily performed. If, however, after having operated upon one of these patients, she continues to complain, as some of them do, the explanation is not that the Alexander operation is to blame for the condition which exists, but that there was a little latent tubal and ovarian trouble, so slight that it was not recognized, and by reason of pulling the ligaments it has been lighted up into activity. However, we put the uterus into a normal, anteverted position. If this pain and suffering remain and the woman consults us for relief, we can operate through the median line and do much better work than Dr. Goldspohn could do through the inguinal route. I am willing to accept his test of the efficiency of the Alexander operation, that the patients remain cured after having been subjected to the possibilities of pregnancy, and I am able to report out of my Alexander opera-

tions at least six women whom I have confined and subsequently examined, and in every one of them the uterus remains where I placed it three to ten years ago. At the same time, I do not want any of you to understand that every one of my Alexander operations has remained permanently cured; fully 10 per cent have fallen back again. Why? That is one of the objections associated with the Alexander operation. If a woman comes to me for examination I cannot tell whether she has a large or a small ligament. So many cases of retroversion have associated with them tubal and ovarian trouble and are therefore not cases for the Alexander operation.

Every woman who has a retroverted uterus should not have an Alexander operation. And do not misunderstand me for a moment as deprecating the use of pessaries. Undoubtedly there are cases in which pessaries are applicable. But there are still other cases where the uterus cannot be held in its position by means of a pessary. There are certain women who look upon the pessary as an abomination, and there are certain married men who object vigorously to their wives wearing pessaries. These are cases in which the Alexander operation can be performed and it results in a permanent cure. With Dr. Goldspohn's operation it is different. It is extensive and unnecessarily complicated. He is a brilliant operator, and has resorted to this method so often that he can do much better work than I could. I know my limitations. I do not believe it is possible for me to enter the inguinal canal and stretch it open so as to put my fist into it and not get a hernia.

Dr. Howard W. Longyear, of Detroit.—It seems to me, after listening to the description of this operation by the essayist, that it must be looked upon largely as a surgical curiosity, excepting possibly in his hands, demonstrating what we might call surgical gymnastics. It is no doubt possible for an expert anatomist like Dr. Goldspohn to do this operation, but what does he accomplish by opening up the inguinal canal and going into the internal ring? He practically makes a large inguinal hernia, and then does a Bassini operation, which is a long procedure in itself. He accomplishes nothing more than we would accomplish by other simpler methods.

Where there are adhesions and it is necessary on that account to go into the abdomen, my plan is to open it through the median line, break up adhesions, do what is necessary, and afterward shorten the round ligaments externally; and I contend that any expert operator, half as expert as Dr. Goldspohn, can do both in less time than it takes him to do these two tedious operations. Of course, I have never done his operation, because it does not appeal to me. I shorten the round ligaments by a modified Alexander operation, and have found it satisfactory. I have done it in nearly sixty cases. I should say that, if I were to have applied Dr. Goldspohn's operation to all of them, it might possibly have been useful in one out of twenty, that being about the number

that had some slight adhesions that I did not recognize before operation, and that demanded abdominal section previous to the shortening of the ligaments.

Dr. John B. Deaver, of Philadelphia.—I want to take exception to one or two points in Dr. Goldspohn's paper. In the first place, I have never found it necessary to open the peritoneal cavity in stripping the round ligament of peritoneum. I have done it accidentally, but there is no good reason, it seems to me, why it should be opened. It is easy to strip the peritoneum back, and if we are in a hurry we may open the peritoneal cavity. I have in the majority of instances, in doing this operation, avoided opening the peritoneal cavity—not that there would be any great objection to it. I speak of this from an anatomical standpoint, maintaining that the operation can be done without necessarily opening the peritoneal cavity.

Again, I question if it is a more simple matter to find the ligament in the inguinal canal than at the external abdominal ring. The latter is next to the inguinal canal.

Dr. John B. Murphy, of Chicago (to Dr. Goldspohn).—Will you explain again how you fix the round ligament? I think that point was not made very clear in your description. Do you include the infundibulum of the peritoneum in the suture, or do you mean that you fix the peritoneum in the inguinal canal?

Dr. Joseph Price, of Philadelphia.—You are all familiar with the evils or disasters of ventrofixation, and many of the men who do these operations are ever ready to accept something that seems more scientific. Most of the gentlemen have prefaced their remarks by an expression of this sort, "a modified Alexander operation." Have these men ever seen Alexander operate? Do they know anything about the precise nature of the steps in his operative procedure? The Alexander operation, as practised years ago, was very much lauded, and in those days it seemed like a very successful operation. At the present time the so-called Alexander operation, in the hands of a good number of operators, is a positive failure. We have had in Philadelphia men who came from New York and Boston for the purpose of making anatomical sections, in order to acquire skill in doing this operation and to practise it more successfully. I repeat that the results from ventrofixation have been ghastly.

To do ventrofixation with the bladder and bowel, and maybe the appendix, all entangled in a strong network of adhesions, is one of the most trying operative procedures. I have received letters from men apologizing for having done these operations. I have such a letter on my desk now from an operator. I scarcely fancy the propriety of doing two abdominal sections where one ought to be sufficient. The operation described by Dr. Goldspohn is a complicated one. In these days the tendency in all operative procedures is to simplify them as much as possible. Let us take one of the cases described. I would remove the pathology, free

the uterus, and detail my assistant to do the Alexander operation, that is, take hold of the round ligaments and anchor them.

DR. GOLDSPOHN (closing the discussion).—I feel grateful for the discussion that my paper has elicited, and am thankful that the gentlemen did not criticise me more severely. I recognize that I am in the vanguard in regard to this entire subject, but I know I am in the right direction. In every university clinic in continental Europe these principles are receiving sanction, although not quite as far as I have pushed them, and it is only a matter of time when more operators in this country will follow suit.

Dr. Hayd is guilty of misrepresentation if he says I am likely to do all kinds of pelvic surgery through the inguinal ring, and perhaps the proper thing for me to do would be to ignore his discussion of that phase of the subject. In all my writings I have distinctly drawn the line at aseptic complications and excluded all cases with pus tubes, neoplasms, and others with complete immobility of the uterus. The simple extraperitoneal Alexander operation will answer for a few simple cases only. But inasmuch as it cures the displacement for life, which no other operation so far has been able to do in the majority of cases, therefore the permanent cure by this method should also be extended to the much larger number of complicated retroversions. And this is readily done without additional incisions by properly utilizing the inguinal canals and rings which are there and can be so used with impunity. Where we have to deal with one simple retroversion of the uterus, we have three of these complicated cases in which the infection has died out. Why shall I not give these three cases the benefit of a permanent procedure, which I can do by extending a simple procedure, rather than cure only simple cases that do not absolutely need an operation and can be treated with pessaries? A simple Alexander operation is a low ideal of surgery for me, too low to accept with proper dignity.

DR. PRICE.—Do you use pessaries at all?

DR. GOLDSPOHN.—For simple retroversions; those cases treated by a simple Alexander operation can be treated by pessaries also.

DR. HAYD.—You will remember that I mentioned certain objections to wearing a pessary. The husband sometimes will not have it; pessaries are not esthetic, and they enter into the domestic happiness of families.

DR. GOLDSPOHN.—Some of the gentlemen fear the development of a hernia following this method. This fear would be removed from their minds entirely if they were to see me operate on one of these cases by this method, and every man who has really operated for hernia successfully and has seen me do this operation has said that there will not be a hernia. Some of them have said, "The abdominal wall is stronger now at that place than it was before." Therefore, I am privileged to make this extension or addition of intraperitoneal work to an improved or more thorough form of Alexander operation.

Dr. Deaver says it is unnecessary to open the peritoneal cavity. This is not so in most cases. I develop the round ligament without intraperitoneal work as far as it will go, and then put my finger into the peritoneal cavity against the body of the uterus and make traction on the ligament, and it does not impart an impetus to the fundus directly at all in about every fourth or fifth individual ligament wound. But I am pulling upon the broad ligament more than half way toward the side of the pelvis. How can such pulling forward of the round ligament at such a disadvantage ever give any prospect of holding the uterus forward permanently? It is necessary to open the peritoneum in every case in order to discover this condition, and to remedy it by separating the round ligament out of the broad ligament more completely. This will be required in about every fourth or fifth wound.

Dr. Murphy asked a pertinent question. The anterior fold of the broad ligament is usually intimately connected with the round ligament; it is really a part of the round ligament. If you attempt to strip it off from the round ligament, you have left an injured and slender structure; therefore, I dissect it out from the broad ligament, leaving this strip of peritoneum attached to the round ligament. I draw it into the inguinal canal, and sandwich the ligament so developed in between the rolls of muscle taken from the internal oblique and transversalis muscles posteriorly, and the posterior surface of Poupart's ligament anteriorly. The inguinal canal is simply filled with these muscles for a distance of about two and a half inches to prevent hernia, and in bringing the muscles down the round ligament is impaled upon every roll of muscle tissue, so brought down into the canal between the two rings. The round ligament is sandwiched in between the posterior surface of Poupart and the rolls of vascular, elastic muscle tissue which fill the inguinal canal. In that way I prevent the shutting off of the circulation from the ligament and get a broad anchorage for it. We make two incisions instead of one, because of the fact that no other operation for retroversion of the uterus has been able to show that it cures the patient of the displacement longer than until the next baby comes, in the majority of instances; while the improved Alexander operations do this almost without an exception. Deductions and conclusions as to the subject should be based upon actual anatomical findings, obtained by a careful subsequent examination of each case that is admitted in evidence, and not upon vague generalizations and guesses. Dr. Hayd, in mentioning his 126 cases, should give exact data, *i.e.*, the data of each operation and the date of examination in each case, as I have done, together with the complete anatomical findings, and not simply summarize by saying, "I believe or know that my cases are all right." Such statements must be discarded in a scientific body.

DR. LONGYEAR.—I would like to ask Dr. Goldspohn whether he has encountered suppuration in any of his cases.

DR. GOLDSPOHN.—In my table there are, I think, two cases mentioned in which stitch-hole abscesses occurred. There was one case of this kind: a rather recent puerperal case in which I removed the appendages on one side and resected the other ovary. The woman had a perfectly smooth course until one day, before three weeks were up, when walking around, about to come out from the Charity Hospital, she experienced a pain suddenly, went to bed, and it developed that a secondary hemorrhage had occurred deep in the wound. She had some elevation of temperature. The blood found its way toward the surface and was let out; and before the openings closed there was suppuration. But the uterus is in a normal position to-day, contrary to my expectation. Those cases that had suppuration I feared, thinking that the round ligaments would let go, but that has not been the case in any instance. I have not had a case to demonstrate this in recent years, but I did years ago, before we worked with gloves. It seems that union of the ligaments and muscles in the inguinal canal occurs so soon that if suppuration does occur the round ligament does not let go.

DR. MURPHY.—What disposition do you make of the excess of the round ligament in your operation?

DR. GOLDSPOHN.—I extirpate it.

DR. DEAVER.—Did I understand you to say that it is impossible to strip the peritoneum from the round ligament clear up to the fundus uteri without opening the peritoneal cavity?

DR. GOLDSPOHN.—In rare cases you can do that; but in most instances you do not shorten the round ligament sufficiently extraperitoneally, or get it to pull from the uterus directly enough to make you certain there will not be a return of the retroversion.

THE IRRATIONAL STARVATION TREATMENT OF APPENDICITIS.

By JOHN B. DEAVER, M.D.,
PHILADELPHIA.

Acute appendicitis is dangerous in that it excites septic peritonitis, the gravity of the appendicial inflammation depending upon the severity of the peritoneal infection. In my experience, based upon several thousand cases, this infection is progressive, and in order to stop the invading process the source of infection must be removed. We must then admit that the early removal of the appendix is the only treatment which promises a low mortality. Furthermore, if the appendix is taken out in the pre-inflammatory stage, that of appendicial colic, with aseptic surgery, and barring accidents, there should be no mortality.

Were it possible to be as cock-sure of the degree and bacteriological type of the peritoneal inflammation as we are of the good results following the early removal of the appendix, then, and then only, might there be ground for arguing in favor of delay. To claim to foresee the degree, type, and extent of the peritoneal inflammation is, to say the least, absurd. It is the privilege of the gentlemen who make these pretensions to claim so great knowledge, but to possess this knowledge I do not think any sane mortal will admit. I have no sympathy for those deceiving themselves in this way, but great sympathy for the poor sufferers who unfortunately come under their care.

We claim to be able to recognize a grave type of peritonitis, but beyond this we make no pretensions and have but little confidence in statements made as to the degree, type, and extent of the peritoneal infection. Bearing this in mind, we wish to sound a note of warning against the advocates of the so-called "rest" or starvation treatment of appendicitis, not, however, against the practice in certain cases of washing out the stomach and giving of all nourishment per rectum. For this method it is claimed that,

by withdrawing all nourishment and cathartics by the mouth, and instituting rectal feeding, gastric lavage, and the use of small doses of opium and local antiphlogistics, particularly antiphlogistine (whatever that may be), which I have seen used, the extension of the peritoneal inflammation in the presence of a gangrenous and perforative appendicitis will "regularly" remain circumscribed. It is further claimed that these patients, recovering, come to the operating table with their abdominal cavities practically in a normal condition, except occasionally a small abscess at the site of the origin of the trouble, or the presence of adhesions. Lastly, it is claimed that by the use of this method of treatment the mortality of acute appendicitis may be markedly reduced.

Against these statements it is the object of this paper to protest and to make a firm stand against any form of treatment, other than early operation, aiming to restore the peritoneal cavity to the condition which exists in the early hours of an appendicial inflammation.

The author's experience for the past two and a half months has furnished the lesson from which the objection to the rest treatment is drawn. From June 15 to September 1, there were operated upon in the German Hospital 98 cases of appendicitis, not including the cases occurring in children. (These statistics were compiled by my Senior House Surgeon, Dr. Müller.) Twenty-seven cases were of the type called chronic, and all recovered. The remainder, 71, were acute in character and 12 died, a mortality of 16.9 per cent. A detailed study of these cases reveals the following points of interest: thirty-two patients suffering from acute appendicitis were sent to the hospital early in the course of the disease, and in whom the infective process was limited to the appendix or to the tissues immediately contiguous. These cases were operated upon immediately, after cleansing the digestive tract with a gentle cathartic or after the giving of an enema. They were typical of the acute type of appendicitis, with the sudden onset, the usual symptoms, and a swollen, edematous, and congested appendix, sometimes with exudate or a local peritonitis about the diseased organ; in a few cases there was a small abscess immediately about a necrotic focus in the appendix. With the exception of one case, they all made a nice and uneventful recovery—a mortality of 3.1 per cent. The single death was a man 64 years of age, whose appendix was removed twelve hours after the onset of the attack. His abdomen was closed with silk tier sutures and he made a good recovery from the

effects of operation. Nine days later he collapsed and suddenly died from cardiac dilatation. Autopsy showed a healthy peritoneum and the wound in the cecum healed and in good condition.

The remaining 39 cases were those unfortunate patients in whom the infective process was allowed to proceed until the diseased appendix had perforated and become necrotic. About this organ, and sometimes extending into the pelvis or upward toward the liver, an abscess existed. They were suffering from systemic poisoning induced by the presence of this highly infectious pus, and an examination of the condition of the abdomen revealed a grave peritonitis from leakage. From their symptoms we knew that they had had an acute attack of appendicitis; from their appearance we knew that they were suffering from grave peritonitis; but beyond this we made no pretensions. Owing, in most instances, to the wishes of the attending physician or to the patient himself, operation was performed within thirty-six hours on 22 of these patients. Five died, a mortality of 22.7 per cent.

In every case there was bilateral rigidity, slight distention, and a more or less well-defined mass. At operation an abscess was found, usually behind the cecum and surrounding the necrotic and perforated appendix. There was but little difficulty in protecting uninfected peritoneum with gauze pads. The abscess was opened, evacuated, the cavity thoroughly cleansed and drained after removing the appendix or its remains. At operation three of the cases were found to have free pus throughout the abdominal cavity. These all died twenty-four to forty-eight hours after operation, and the autopsy revealed general purulent peritonitis.

A fourth death was that of a patient with a large abscess, well walled off, but suffering from the absorption of septic products. The operation further weakened the resisting power and death ensued in a few days. Autopsy revealed gangrene of the cecum, local adhesive peritonitis, with the remaining peritoneum apparently healthy.

The fifth case was one that had been treated for gastritis for six weeks before admission; she was confined to bed and given minute quantities of nourishment by mouth and with occasional rectal alimentation—a sort of modified "rest" treatment. She slowly became more and more septic and was operated upon in twenty-four hours after admission. A large mass of adhesions was present. There was pus about a badly diseased appendix in

the pelvis, and an infected tube on the right side. Patient died five days after operation, and the autopsy showed a gangrenous cecum with a local peritonitis. It is hardly fair to class this case among these deaths because of the closeness with which her attending physician followed the starvation treatment for so many weeks.

The remaining 17 cases were treated by the "rest" or starvation treatment as practised by Dr. Ochsner. These patients were admitted on an average of five days after the onset of the attack. Fifteen cases had marked bilateral rigidity. In 2 cases right-sided rigidity alone was present. In every case distention was present in greater or less degree. There was fever, a rapid pulse, and tenderness over the entire abdomen. In 9 cases a mass could be palpated. In 8 cases none was present. The leucocytes numbered from 15,000 to 30,000, with a polynuclear increase indicating pus. The stomach was well washed out and all food and catharsis by mouth was withdrawn. Rectal feeding every four to six hours was resorted to, and either ice or warm fomentations applied to the abdomen. The progress of the case was then carefully watched. We found that the distention lessened in 13 of the cases and that the rigidity became less pronounced in these cases. In the other 4 there was no improvement noticed after from four to seven days of treatment.

In those cases where a mass existed on admission we found a slow and steady increase in the size of this tumor. It never decreased in the slightest extent. Of the 8 cases in which a mass was absent on the first examination, in 4 a mass promptly appeared a few days after the inauguration of the rest treatment and was accompanied by agonizing pain. In 3 cases there never was a mass, and these were those cases where a small abscess was found about the appendix with a mass of adhesions in the right iliac fossa. One of them died five days after operation. This patient was admitted seven days after the onset of the attack, with marked abdominal distention, pain, and tenderness, most marked on the left side. No distinct mass could be determined. There was a leucocytosis of 17,600. The patient was slightly septic. The starvation treatment was inaugurated and continued for nine days. During the first few days of this treatment the condition seemed to improve—that is, the condition of the abdomen—but the patient slowly weakened and about the fifth day after admission relapsed, the abdomen once more distending. There was slight delirium for a few hours. Again an improve-

ment began and operation was performed. About the appendix a small abscess was found, with the organ on the brim of the pelvis and adherent to the cecum, which was soft and friable. The right side of the abdominal cavity was a mass of adhesions, which were more highly organized about the site of the appendix and more recent toward the middle line. The appendix was removed and the pelvis and right iliac fossa were drained. On the second day after operation the patient began to show the characteristic signs of septic peritonitis and died on the fifth day. An autopsy revealed a general adhesive peritonitis, with collections of pus in the pelvis and among the coils of intestine, and a gangrenous cecum. It is evident, in my mind, that an early operation would have saved this case—one performed before the advancing peritonitis had sapped the resistance of the patient until operation was too late to prevent death.

The eighth case was one in which the diagnosis grossly exaggerated the gravity of the intraperitoneal lesion. After fifteen days of "rest" treatment the appendix was found thickened and nearly occluded and adherent to the floor of the iliac fossa; very few adhesions were present. A microscopical examination revealed an interstitial appendicitis of long standing.

The course of the 13 cases with large abscess formation was that of a steady progressing toward increase in size of the mass and sooner or later the absorption of its septic products. When the symptoms of pyemia began operation was performed. It was then found that, instead of the nearly normal peritoneum, the entire right side was a mass of adhesions, with a large abscess about the infecting appendix, in several cases extending from the pelvis to the liver. The amount of pus in some of these cases was too enormous for description and was very malodorous. In 2 fatal cases the entire pelvis was a huge abscess extending up to the right iliac fossa. In 6 cases no attempt was made to find the appendix; we were satisfied with opening and draining the abscess, so terrible was the condition of affairs found. In one case the appendix had sloughed off. Two cases were opened by reflecting the peritoneum and going into the abscess from the outside.

The cases were all well drained and left unsutured.

Six of these 17 cases died, a mortality of 35.3 per cent. Where, then, is the reduction in the mortality? Five of these 6 patients were distinctly made worse by waiting, and some of them would probably have recovered had they been operated upon earlier.

It was observed that even the etherization of these cases was more difficult than usual, and I have frequently remarked to my students that the way a patient takes ether is often an index as to the gravity of the intraperitoneal lesion. After opening the abdomen it was a serious problem how to dispose gauze pads before opening the abscess; there were so many adhesions, not so complete as to effectually wall off the pus, but enough to interfere with the placing of the gauze. It was also found that the infected coils of intestine were so friable that the breaking of any adhesions would cause the serous coat to peel off. The latter remark might suggest that in the presence of a walled-off abscess the peritoneal cavity should not be opened; but it is impossible to gain access to these abscesses in any other way, situated as they are behind the cecum and colon and well to the median line side of the flank.

The autopsies revealed a general purulent peritonitis in 4 cases, a general adhesive peritonitis in 2 cases, with pockets of pus among the coils of bowel and in the pelvis. The cecum was gangrenous in 5 of the autopsies.

The cases recovering were discharged on an average of thirty-two days after operation, while 5 of the cases are at date of writing still in the hospital, one of them with a large fecal fistula twenty-nine days after operation. In a second case a secondary pus collection was evacuated a few days ago.

What are the lessons we draw from these cases?

1. That an early operation, preferably in the stage of appendicial colic, is the only rational procedure and is the only treatment which will reduce the mortality in acute appendicitis to insignificant figures.

2. That the so-called "rest" treatment of appendicitis fails to check peritoneal inflammation and will in the majority of instances harm the patient.

The figures presented in this paper bear their statements out to the letter. In the cases where there was no active inflammation, no infection, the mortality was *nil*. In the cases operated upon before the peritoneal inflammation had become extensive, or in those where the appendix alone was involved, the mortality was 3.1, and that mortality due to a late complication. In those cases suffering from advanced peritonitis with abscess formation and operated upon immediately, the mortality rose to 22.7 per cent, while the "rest" treatment, for which it is claimed that the mortality is greatly reduced, gave 35.3 per cent of deaths.

It is evident that the gentlemen who make these claims have either been deceived, in that they have encountered a different class of cases than we have, or that they have misjudged their cases. I believe that teaching the "rest" or starvation treatment has and will raise the mortality of the disease under discussion, in that it cannot benefit or improve the serious cases where the intraperitoneal lesion is extensive; that it defeats the cause of early operation; and last, but by no means least, it gives the attending medical man as well as the friends of the patient a false hope. It gives them something apparently tangible to cling to as against the teaching of operation immediately following the making of an early diagnosis. In my own experience I find that a septic process once inaugurated continues to play havoc so long as it lasts, and no treatment other than early operation will stay that process.

Those cases of appendicitis brought to the operating table several days after the onset of the disease, where the starvation treatment has been carried out and a local abscess or a mass of exudate and adhesions is found, do not by any means convince me that those patients would not have been better off by operation earlier. In my experience these cases do not give a high mortality from operation. To attempt to foretell what the intraperitoneal condition is, or what it will be a few days or weeks later, is assuming a graver responsibility than is justifiable. Such a prediction is never made by those whose experience with the disease would justify such a confidence.

I have never had cause to regret the removal of a healthy appendix, if there is such a thing, and I have not yet seen any influence, except for the worse, exerted upon the progress of peritoneal inflammation following acute appendicitis by the use of the "rest" treatment. I am willing to grant that operation in the presence of an acutely inflamed general peritonitis is attended by great risk to life, and therefore it is often wise to defer operation in the hope that the inflammatory process will become localized. This is often my practice; but I flatly deny that the starvation plan of treatment promises more in these cases than the more common practice of abstaining absolutely from giving opium, keeping the bowels freely open by solid cathartics, giving nourishment by the rectum when the stomach is intolerant, and using ice or heat locally in the shape of poultices or hot turpentine stupes.

DISCUSSION.

DR. WASHINGTON H. BAKER, of Philadelphia.—I enjoyed Dr. Deaver's paper very much, was instructed by it, and I thoroughly agree with everything he said with reference to early operations. Although I have had a large experience with intra-abdominal inflammations, and particularly with cases of appendicitis, I have never operated on them. I recall two cases that were operated upon for me when I was physically unwell. One was a case of acute inflammation of the appendix. The patient was taken to the hospital and was operated upon. It was not conclusive to me that it was absolutely necessary to operate. If I had been in a normal condition physically, perhaps the result would have been different. The second case was that of a young man, who was operated upon for appendicitis by another surgeon because I felt that I did not have the physical strength to cope with it. He had an inflamed appendix.

I will refer to a case of what might be called the fulminating type of disease. I was the attending physician in the case, and the patient was apparently doing fairly well, when suddenly alarming symptoms developed, and I felt that the patient could not be taken to Dr. Deaver for operation quick enough. I at once called on Dr. Deaver, and he agreed as to the condition present and the necessity for immediate operation. On visiting the patient immediately, for some unaccountable reason, the condition had changed for the better, and Dr. Deaver did not wish to operate. I admired him for that. This patient has been perfectly well ever since.

I had a consultation over a case with Dr. Morton, who did not give the patient the slightest encouragement without an operation. He would have operated if consent could have been obtained. Several days afterward he was interested in knowing how the patient was getting along, and I told him he was doing well. The man recovered without operation, and is well to-day. All of my other cases are well, so far as I know, and have not a recurrent symptom connected with the appendix.

I do not want to make the statement too strong, but it has seemed to me that sometimes there is a want of conscientious regard for the patient. Because we have the latest aseptic surgery, we have no right to open any important structure unless it is absolutely necessary. That is what I think, and if my patients say to me, "Doctor, is there any risk in this operation?" I reply, "Yes; if your skin is scratched you may die." I maintain that any solution of continuity whatever may be fatal. I wish to state that the physician, with the help of the surgeon, cannot shirk the responsibility of deciding whether in their combined judgment operation is necessary. Experience and knowledge should make this decision humanly certain.

DR. L. S. MCMURTRY, of Louisville.—It is very important, fol-

lowing the suggestion of Dr. Murphy, that we bear in mind the subject before us is not the general topic of appendicitis, which can be taken up and discussed by this association for a week without exhausting it entirely, but we are here to discuss Dr. Deaver's paper, which deals with the starvation treatment of appendicitis and which he regards as irrational.

Dr. Deaver's paper is that of a man who writes with his apron on. He has had a very large experience, and in dealing with this subject he was very much impressed with his side of it, before he instituted a study of this group of cases during the last two and a half months. There are some cases which he presented that in my judgment should not have been operated on at all. The cases of general suppurative peritonitis described by him as almost in a dying condition, practically hopeless, should not have been operated on; for when these patients are operated upon the results only tend to throw discredit upon surgical intervention in appendicitis, and deter and delay others that might be saved by prompt and timely operation. I say this because I do not believe we are able to save patients who are dying of general suppurative peritonitis.

Dr. Deaver made one very important observation about the starvation treatment and expectancy as applied to these cases, namely, that there was no evidence of any abatement or diminution of the pathological process. If I understood him correctly, his observation of these cases shows that under this treatment the tumor increased, the area of invasion proceeding in spite of the treatment.

The important point to develop in this discussion is the observations of men of large experience as to the influence of rest and delay when separated from starvation and opium. In my judgment, there is nothing to be gained by the administration of opium in any such condition as this. In a large experience extending over a number of years, seeing and operating upon every variety of appendicitis that has been mentioned, I have been unable to see an instance in which opium had any place whatever in the successful therapy of this disease. In the next place, all of my experience has been a protest against delay. While I am satisfied that we have had a number of cases presented this morning where the operation is practically hopeless, yet in a certain proportion of them we will find that there is no way to determine a case that is hopeless and separate it from those cases that are not hopeless, except by abdominal section. The man is not living who is able to differentiate the hopeless cases from those that may be successfully operated upon, before he performs the operation.

Dr. Rufus B. Hall, of Cincinnati.—I have been much interested in the paper of Dr. Deaver, also in the discussion, and I agree with the last speaker that the question before the association is the starvation treatment of appendicitis. I am not surprised at the deductions in the paper, that the starvation plan has yielded the results alluded to by the essayist. As to what has

been done by the starvation plan, or medical treatment which is practically equivalent to the starvation method, the experience of every Fellow present with delayed operations will testify.

One point Dr. McMurtry made was not quite clear to me, and I think it ought to be amplified. He rather criticised Dr. Deaver for operating on cases that ought not to have been operated upon. If we could tell exactly the cases that ought not to be operated on from those which ought to be operated on, the rule laid down by Dr. McMurtry would hold good. It seems to me, every patient with an abscess in the side who is not dying should have the chance that surgery affords. In two of the cases Dr. Deaver reported, after opening the abdomen he found the abscesses had broken down. I believe these cases should be operated upon, and patients should understand clearly how little chance they have for their lives from delayed operations. They should be operated upon, because they will all die if we do not operate. I believe the doctrine of the starvation treatment will do more harm than good in the next five years, until it can be disproven and its fallacy demonstrated. Undoubtedly a large number of lives have been lost by the starvation plan that could otherwise have been saved.

Dr. F. D. Thompson, of Fort Worth, Texas.—This is one of the most important subjects that can come before the association, and it has occurred to me that we have gone far enough to reach some settled convictions. Dr. Deaver's paper is well to the point for a man living in Philadelphia. With some of us, who live far away from medical centres, in small cities surrounded by sparsely-settled country, there is a different state of affairs. Early operation should always be done, if possible; if operations are done in the first twenty-four to thirty-six hours these patients will all get well. I never saw a patient under these circumstances that did not recover. Those who are operated upon between the attacks likewise get well. The cases of appendicial abscess nearly all recover. When a fecal fistula follows it usually closes spontaneously.

The question arises: What shall we do with those cases that are allowed to go beyond thirty-six hours, and the surgeon does not see or hear of them for three, four, or five days? My experience has been that I am not justified in operating on one case out of half a dozen that I am called to see away from home. The diagnosis is not made early enough, and the conditions are such that we do not feel warranted in operating. There may be great distention of the abdomen, the patient having a pulse of 150 to 160, elevation of temperature, with possibly well-marked general peritonitis. When I was called to those cases in my early days, and operated on them, every one of them died. I made a small opening and drained—they died. I made a large opening, drained, and they died. I made an opening on both sides and drained from pelvis to diaphragm, and yet they died, and I quit. I do not operate on that class of cases any more.

Just a few days ago a gentleman in Decatur, fifty miles from

my town, telephoned me to come and operate on a case of appendicitis. The patient had had the disease for five days. I learned that he had a pulse of 160, temperature 104°, with a greatly-distended abdomen. I said to the physician: "You will probably have more need of an undertaker than a surgeon. Telephone me at 7 o'clock in the morning before the train leaves Fort Worth." At 7 o'clock A.M. he called me up and said the patient had died an hour before. This represents a large class of the cases that I am called out of town to see.

Speaking of the treatment, it seems to me that rest, quiet, cold applications to abdomen, nothing by mouth, and rectal nourishment offer the most rational course to be pursued to tide these patients over when they have passed the time for early operation.

DR. BROOKS F. BEEBE, of Cincinnati (by invitation).—I am a convert from the medical to the surgical treatment of this disease, and this conversion has come about because of my own personal experience. The starvation treatment of appendicitis is certainly irrational. For four years I undertook that treatment upon myself; I had six or eight attacks, and my case was put down in the records as a cure. But sooner or later in this disease one will encounter such a severe attack that he will wish for something else besides medicine to take hold of him. I became tired of my fight, and was at last operated upon. The surgeons found a big, fat, juicy appendix, as thick as one's thumb, with no adhesions. There was a necrotic spot on one side of the appendix, showing that operation was needed in this particular instance.

I simply cite my own case as an illustration of the importance of operation. I now believe that the earlier an operation is performed in appendicitis the better.

DR. MILES F. PORTER, of Fort Wayne.—It occurs to me that we ought to know pretty well what the advocates of the so-called starvation treatment of appendicitis really advocate. I presume we may regard Dr. Ochsner, of Chicago, as the champion of this method of treatment. Dr. Ochsner believes in the early removal of the appendix; he believes in the later removal of the appendix; he likewise believes in the removal of appendices in the interval. He treats only those cases by the starvation plan that have been described by Dr. McMurtry as inoperable, and, as Dr. Hall and Dr. Thompson said, these patients will die whether they are operated upon or let alone. That is my understanding of the Ochsner plan, and I think it is the correct one, for I have had a long personal talk with Dr. Ochsner about his method and know what he really advocates. Is it good treatment for even this class of cases? And here I want to say that it does not occur to me as very good surgery to let any man die with a belly full of pus. It is a good plan to let out pus, and not show it the respect of an ordinary funeral by burying it with the corpse.

The starvation theory looks to me like this, and I am after the

truth: if you have a small conflagration in the corner of this hotel, and a bucket of water is not sufficient to combat it, it is your bounden duty to call the fire department to put it out. If the conflagration has extended over half the room, and there is no water that you can use yourself, you might send for the fire department to carry the furniture downstairs and clean the house up in the hope that the fire would starve out. I tell you where I think the trouble comes in: in every case with distended abdomen and pulse of 150 or more, if you operate, all of them will not die. Every man with a cold, clammy skin, rapid pulse, and distended abdomen has not got general peritonitis. A patient may have a virulent circumscribed peritonitis; if so, he has a large amount of toxic material in his blood. That patient will get better, so that you can operate in the interval if you are given a chance to do so. This class of cases can be treated successfully by the starvation method and operated upon in the interval, provided any man living can tell that kind of a case from one whose abdomen is full of pus. Is there any such man? I have never seen him. Every patient with a belly full of pus, if he has one chance in twenty thousand of getting well, should have that chance, which must come from surgery.

Dr. C. L. Bonifield, of Cincinnati.—I wish to preface my remarks by saying that there are few operators at the present time who do not agree absolutely with Dr. Deaver, that every case of appendicitis, if the diagnosis can be made and the patient is situated so that he can secure the services of a skilled operator to do the work, should be operated upon within the first twenty-four hours. The only argument that comes to us here is: what shall we do with those cases we do not see at that time, or do not have the opportunity to operate upon at that time, or the patients are not so situated that they can have an expert operator to do the work? I preface my remarks with this statement because I shall try to prove that the Ochsner treatment is not absolutely irrational in this class of cases.

Dr. McMurtry spoke of the uselessness of opium. I want to call attention to the fact that many years ago Alonzo Clark brought forward the opium treatment of peritonitis, and it was the accepted treatment for a number of years. The fact that the profession accepted it for a number of years is a proof there was a certain foundation for it. While the opium treatment has grave objections, and I personally never resort to it, yet I believe it was beneficial in one way, and it was this: we know that the peritoneum, in attempting to limit inflammation, welds together the bowels, making a dam. The only good effect opium had was to stop peristalsis and in that way assist in building the dam. But it had the decided disadvantage of obscuring symptoms, of blocking up the secretions, and its disadvantages outweighed its advantages, so that when Tait taught us the proper treatment of peritonitis after operations we have gone to that treatment of peritonitis in other conditions. The con-

ditions existing in peritonitis after an operation, and in peritonitis arising from appendicitis or from salpingitis, are entirely different.

When we operate on a patient we disseminate more or less infection through the peritoneal cavity, while nature's method of treating peritonitis is to limit it as much as possible. Now, if we can help nature to limit peritonitis without the disadvantages of opium, we are helping to treat the disease, and that is all the treatment Ochsner claims to do; by keeping the stomach absolutely empty we arrest peristalsis, and I think in many of these cases it is better to abstain from rectal feeding. Is there any other indication in the treatment besides the arrest of peristalsis? These patients suffer from pain. There are two things of decided value in relieving this: first, the application of ice, as Dr. Deaver suggested (and I also agree with him that antiphlogistine is an abomination); second, the administration of veratrum viride. It relieves pain as surely and more lastingly than opium. It has none of the ill effects of opium. It stimulates the kidneys, the skin, and the liver, and causes a pouring out of bile, which is nature's intestinal antiseptic.

Dr. John B. Murphy, of Chicago.—I wish to congratulate Dr. Deaver on the courage of his convictions and honesty of statements. If the Saratoga meeting of the American Medical Association has had such an effect upon Dr. Deaver, what effect must it have had on the general practitioner? Gentlemen, let us get Dr. Ochsner's position right. I know Dr. Ochsner very well. He is an able and conscientious man, but a man may be able and conscientious and yet be in error or misunderstood. The treatment of Dr. Ochsner is founded on two principles: first, by stopping oral feeding we arrest peristalsis; second, by withdrawing food we prevent decomposition above the position of inflammation, and arrest absorption of the decomposing contents of the intestinal tract. The first is true under physiologic conditions; it is erroneous under pathologic conditions. We cannot excite peristalsis with a general suppurative peritonitis, with abrasion of peritoneum, whether we give cathartics or food; there is a paralysis of peristalsis with infection. There is just as much difference in the varieties of peritonitis as there is in the varieties of smallpox or the different varieties of typhoid fever. The seropurulent type of peritonitis, where we have a quart or two of fluid in the cavity, where the intestine is not blistered or eroded, I look upon as favorable to recovery, and I do not recall a single patient who died after operation with this variety of peritonitis. The opposite was the case when the peritoneum was eroded of its endothelia and its lymph spaces opened for absorption. The next point made by Dr. Ochsner is the arrest of decomposition above the point of inflammation. This material has a deleterious influence. I believe it depresses the patient just the same as decomposition above the point of obstruction in the cases of mechanical ileus, the depression we

attribute to one condition in ileus where there is no strangulation; the absorption of decomposed material causes enormous depression, particularly in a patient where the obstruction has lasted for four or five days.

Another point on which I wish to congratulate Dr. Deaver—one on which he was misunderstood at Saratoga—and that is, that in six cases he did not endeavor to remove the appendix, so that we cannot charge him with excessive operation, as was done at the Saratoga meeting. He has made himself clear that he has seen cases which would not withstand any other procedure than simple drainage. For many years I could not understand why my lamented friend, Dr. Fenger, was so strongly opposed to early operation, while I felt just as strongly in the opposite direction. Why? Fenger had presented to him cases late in consultation, just like Dr. Deaver's bad cases, and out of the first eleven cases operated by Fenger ten of them died, as reported in his original paper. You can see now why he did not want to operate. In my first one hundred cases of appendicitis, which I operated when I was doing general practice, operating in kitchens, farmhouses, and the like, I lost eleven; yet Dr. Fenger lost ten out of eleven, because he saw a different class of cases, all late in consultation.

We must go back to the question: Shall we operate on every case when we get it, bad and good, or will the results achieved justify us in waiting, in some cases for days or weeks, thinking we can estimate what the subsequent pathological course will be, or go ahead in other cases, thinking that we cannot estimate? I believe, first, that we cannot accurately estimate what the subsequent course of a given case will be. I believe, second, that while in many instances a general suppurative peritonitis appears to exist, leading us to suspect a large quantity of pus in the free cavity, yet on operating we find nothing but a deep retrocecal cellulitis, nothing but a circumscribed inflammation, the paralysis of peristalsis, which we believe is due to the general peritonitis from the intense infection behind the peritoneum which produced a dynamic type of ileus.

Finally, as to the position of the public in regard to appendicitis. The public generally is right in regard to this disease, and I think if we were to educate it on other subjects as we have on appendicitis, we would have many, many less deaths from some diseases than we have now. The courage to go ahead and act in the face of great responsibility, knowing there would be more or less blame, entered into consideration in the early operative period of appendicitis. Now the pendulum is swinging the other way. The public demands immediate or early operation, in order to save lives, and a physician hesitates to assume the responsibility of a death without operation. If we can keep the personal element out of this discussion and confine ourselves to what Ochsner really means, we will accomplish something. What Dr. Ochsner means is this, as Dr. Porter has said, that in all

cases of supposed general peritonitis he waits. When patients have a distended abdomen, with the absence of peristalsis, with or without temperature, but with the symptoms of peritonitis, he waits. I think we are convinced that we can open the abdomen in a case of appendicial or periappendicial abscess with pus, and even in peritonitis, establish drainage, and remove at the same time the appendix, if it is accessible, with greater safety than trust to nature to care for such conditions.

DR. MCMURTRY.—Will you please tell us, Dr. Murphy, if, in a certain class of cases of appendicitis, such as you have described, you delay operation or not, and do you apply the rule to operate on all cases as soon as they are seen, if not seen in the first fifty hours especially?

DR. MURPHY.—I will divide the answer to that question into three parts. First, if I saw a case on the tenth or eleventh day with subsidence of all symptoms, and I was at a distance from the most favorable place to do an operation, I would let the case go. In that class of cases I would defer operation until I could get to a place where I could operate most favorably. I would be uncomfortable, though, as it has been my experience that I cannot estimate how a case is going to terminate until I have the appendix in a bottle for forty-eight hours. I do not know what the pathological condition is inside from the manifestations of the symptoms outside. Only last week I made a mistake in diagnosis. I did not think of the appendix at all, because I was invited to see a case of intestinal obstruction, as the interne said it was such. I remarked before operating that the conditions were against intestinal obstruction. There was increased leucocytosis, a tumor on the left side, and absence of temperature, and vomiting had ceased for hours. There was no history of an attack preceding this. There was an abscess at the left superior spine of the ilium. I opened the abdomen, traced the pus down to the pelvis, found and took out the appendix.

Another case in reply to Dr. McMurtry's question: I was called to see a brewer at South Bend who had a bloated abdomen and acute mental depression from absorption. I made a diagnosis of general peritonitis from appendicitis. I said that I would not touch him, because he would die. He was delirious. He was a fat man, a rapid absorber, who weighed 310 pounds. Two days afterward I operated and removed a quart of pus, also the appendix. He recovered.

DR. MACDONALD.—I would like to have Dr. Murphy explain how to differentiate between intestinal obstruction and appendicitis by leucocytosis.

DR. MURPHY.—Leucocytosis is a manifestation of the reaction of the tissues and blood to infection, but not to every infection. In a dozen cases of typhoid with perforation, we did not have more than half in which there was an increase of the number of leucocytes. In a number of cases, on account of the absence of leucocytosis, it was believed there was no perforation; operation

at post-mortem showed the error. There are conditions in which reaction is present, the cause of which we do not accept. I considered leucocytosis for a long time as a strong support in the differential diagnosis between inflammatory conditions and obstruction of the intestine. I know that a perforative peritonitis can exist without a leucocytosis—positively. I know, too, the rule is, when a perforative peritonitis occurs in a patient otherwise well, that that patient has the reaction of the tissues and leucocytosis, as I will cite in my paper to-morrow on duodenal perforations.

DR. MACDONALD.—Have you not seen a case of leucocytosis in intestinal obstruction?

DR. MURPHY.—No, I have not. Referring again to the case of the brewer, I said he would die. I went back to Chicago and did not operate on him. I was told to come again in forty-eight hours. I operated on him the second day afterward, and he recovered. He was sick three days before I saw him. I operated on the fifth day after the onset.

I had three cases after coming back from the Columbus meeting of the American Medical Association, of such a nature that I deemed it advisable to wait, believing that the patients would die if operated, and they did die without operation.

As to the third part of the question, I do not defer operation in cases that I see inside of the first forty-eight hours. In some of the seemingly unfavorable cases I am sure I have saved many lives by prompt operation—*i.e.*, by getting into the abdomen quickly and getting out quicker, then putting the patient in the sitting position to favor pelvic drainage.

DR. JOSEPH PRICE, of Philadelphia.—We cannot help but thank Dr. Deaver for his admirable paper, in which he has displayed good anatomical and surgical judgment, and deserves credit for the rebuttal he has made of the starvation method of treatment. When we consider the large number of practitioners who listened to the unfortunate paper of Dr. Ochsner, we know it will take a long time to reach them and counteract the influence his paper has had over forty-eight states. Many of you are familiar with the fact that there were four hundred deaths recorded in Chicago alone from appendicitis; and that is not one-third or one-fourth of the deaths attributed to cholera infantum, cholera morbus, inflammation of the bowel, and the like, and I believe one could safely multiply four hundred by four to obtain the aggregate number of deaths from appendicitis in Chicago alone. A large number of deaths occur from delay, procrastination, the use of calomel, Rochelle salts. I lament very much the paper of Dr. Ochsner, and I lament it all the more because of his large and varied surgical experience.

I was one of the first to report cases of suppurative appendicitis in this country. I put on record between fifty and one hundred cases. I wrote a number of the early papers on the suppurative form of peritonitis due to appendicitis. Drs. Douglas and

Davis will remember some of those papers. At first my veracity was challenged. At Detroit and Milwaukee some of my statements were regarded as untruthful relating to the suppurative forms of peritonitis due to appendicitis. Those were the men whom Ochsner influenced at the Saratoga meeting of the American Medical Association.

DR. J. HENRY CARSTENS, of Detroit.—There is one point in regard to the use of opium that I wish to speak of—namely, we have patients in whom, as the result of severe pain and other symptoms at the onset of the disease, the pulse rises to 150, 160, or 170 during the first twelve or twenty-four hours, and I contend that if those patients are given one large dose of opium it will prevent shock, allay nervous irritability, and in the course of six or twelve hours the pulse will go down very materially, so that you can operate upon them with more safety than if you did not give them opium. In making this statement, I do not wish to be understood as advocating the use of opium in cases of appendicitis. But I am firmly convinced that there are conditions where one or two good doses of opium will relieve the symptoms and put the patient in a better condition for operation.

With reference to the paper of Dr. Deaver, I agree with everything he has said. Dr. Ochsner has qualified his statements in regard to the so-called starvation treatment. In his original statement he did not say anything about the first and second days. That is an after-thought. He goes around and says, operate in the first forty-eight hours; if you can't operate then, you had better wait. This idea of the Ochsner treatment has been spread broadcast among the general practitioners. They make use of this treatment, and they will tell you that they can practise it just as well on the first and second days, and they do not call in a surgeon. Thus, much harm results. It is very essential for us to use good judgment in all cases. Once in a while we see a patient whose environment and condition are such that he would stand a very poor chance for an operation; but if we wait twenty-four hours and he has the skill of a good surgeon, his chances would be better. Of course, a good deal depends upon the surgeon. Some men who operate on cases of appendicitis do not know how to do it properly. They never learn. We have all had to learn. It depends altogether on how you operate. One great trouble with beginners in this work is that they try to do too much. They want to get the appendix out and show it. If they did as Deaver and Murphy sometimes do, simply open the appendicial abscess, drain, and give the *vis medicatrix naturæ* a chance, their patients would recover. But they are dissatisfied: they fish around for the appendix and spread pus over the peritoneal cavity, hence their patients die.

DR. WILLIS G. MACDONALD, of Albany.—I have an impression that every method of treatment, including the starvation treatment, whatever that may be, which involves delay in operating is a bad thing. There can be no question in my mind

as to that. I am satisfied that if every case of appendicitis in the United States, regardless of the skill of the operator, was operated upon under the best local conditions that could be obtained, the mortality would be less than it is now.

Appendicitis has become a local issue in a good many neighborhoods, and in certain territories there is a small mortality from this disease, because both general practitioners and surgeons are educated up to the point that it is not a disease to speculate about, but one which demands immediate action; and if the surgeon gets to the point of operating on every case of appendicitis as soon as he sees it, I believe he is doing the best for the large number of patients he is going to treat. I have yet to see a single case of appendicitis anywhere, under any conditions, which, in my opinion, demanded a dose of opium as a preliminary to any treatment.

Two years ago I was tempted to speculate on the subject of leucocytosis in intra-abdominal inflammations. I thought there was a general rule about the matter, but there is a sufficient amount of exception to the rule which will lead one to make mistakes, if he follows the teachings of men who have largely a laboratory experience. However much I value the work of the laboratory as a clinical aid, yet I believe that there is something in bedside medicine which is a better guide for us in every case than the results frequently of laboratory investigation. This is a matter of experience. I regard it as extremely unfortunate, not for the physicians altogether, but for the people whom we are to serve, that any of these newer questions of starvation or of leucocytosis should be injected into a problem which is becoming gradually settled. We have eliminated, in certain territories, the waiting for an interval operation. That has done incalculable damage in the state of New York. I can point out districts under the influence of certain men in the state of New York where there is a higher mortality from appendicitis, ten times, than there would be in the hands of good surgeons.

Dr. Deaver (closing the discussion.)—The principal object of my paper was to further advocate and impress the importance of early operation as against the abominable method of the starvation treatment in cases of appendicitis. It has been my pleasure to listen to many discussions on this subject, and I feel grateful for the complimentary remarks that have been made. I have, with the assistance of my friend Dr. Price and others, done what little I could to help dig Philadelphia out of the mire in regard to this question.

So many points have been brought out in this discussion by the different speakers that I will only touch on a few of them. Dr. Murphy referred to some cases of appendicitis on which I refused to operate. Given a patient with a distended abdomen; with regurgitant vomiting; restless, but with a bright eye and an active brain, a high pulse, with a leaky skin—that patient is practically *in articulo mortis*. Such cases I do not operate on.

At the Saratoga meeting of the American Medical Association it was brought to my notice by some gentlemen that it was thought I did too much surgery. I never take out an appendix where I do damage in searching for it. I want that distinctly and thoroughly understood in reference to appendicitis. The class of cases of appendicitis I see, as a rule, are not walled-off abscesses, by which I mean where there is a tumor presenting above Poupart's ligament, a tumor that you can go down upon by extraperitoneal dissection and are able to gain access to the pus cavity. The majority of cases of post-cecal and post-colonic abscesses I see, cannot be located positively until the general peritoneal cavity has been opened, when the cecum and colon, and a large mass posterior to both and adherent to the layers of the ascending mesocolon, present. I will defy any man to open such an abscess through the peritoneal cavity without protecting that cavity, and in protecting it not to expose the patient to some risk of infection. The only other salvation is to close up the wound and make a dissection through the loin space posteriorly. It is the only possible way you can get at these abscesses.

The gentlemen who have had a large percentage of recoveries following the evacuation of abscesses, have been fortunate in encountering those abscesses at a point where they could simply stick a knife in the abdominal wall and the pus would fly out. But these cases are few.

Dr. Thompson, of Texas, has been unfortunate, I think, in not operating on some of the cases that he declined; but whether his results would have been any better I am not able to say.

I take decided exception to Dr. Ochsner's position, in that he draws conclusions relative to a pathological condition which Dr. Murphy and I agree no living man can determine without opening the abdomen, and I make it a point at my clinics to say to the class, the more I see the less I know. And the contrary is just as true: those who see the least always claim to know the most. The only pathology I place reliance on in cases of appendicitis is antemortem pathology, which is learned at the bedside. If Dr. Ochsner says these cases will recover under the local starvation method, then I claim that the cases he sees are entirely different from those seen by me. With Dr. Murphy, I have much more regard for the surgeon's than for nature's efforts to cure these cases.

As to the question Dr. Murphy raised relative to intestinal paresis, it is unquestionably true that in a certain percentage of these cases we have a paresis, a bowel palsy, from infection. Where we have simply an inflamed appendix, the organ tied up in the cellular tissue, post-cecal, but not a drop of pus outside the appendix, those cases, in my experience, if we do not have a scalded peritoneum, recover. I believe in operating on that class of cases. I believe by operating on them the mortality would be less than that following the starvation method of treat-

ment—hoping, sooner or later, that the abscess will localize itself and afford an opportunity of making an extraperitoneal evacuation.

I agree as to the points raised with reference to the decomposition of food and its further absorption, drowning the patient, as it were, with sepsis.

As to the question of opium, I was very much chafed when my junior house surgeon said to me one day, voluntarily, without raising the question at all: "Doctor Deaver, I am glad to say that since I have been in your surgical service I have given but one dose of opium." I said to him: "If I had known that before, I do not know but what I would have asked for your resignation." I cannot agree with the statement made by Dr. Carstens with reference to opium. I should say, give them a dose of cold clean steel in the place of that dose of opium. When we mention opium before a scientific body of men like this, it gives the general practitioner something to cling to, and it is unnecessary for us to discuss how it masks or obscures symptoms.

DR. CARSTENS.—I qualified my remarks with reference to the administration of opium. I was talking about a patient susceptible to, or who had, severe pain, and her heart was weak, her pulse 150, 160, or perhaps 170, and suffering from profound shock as the result of that pain. It was the exceptional cases that I mentioned in which I would give a dose of opium. In such cases a dose of opium affords great relief.

DR. DEAVER (resuming).—Give them a little more pain and you accomplish more.

I am very glad the question of leucocytosis has been brought up. I have taken part in some discussions relative to it. This is the position I take in regard to leucocytosis: like the X-ray laboratory for intra-abdominal diagnosis, while I am a strong believer in the X-ray, it is deceptive in many instances. My house physician says to me: "We have got such and such reports regarding this or that case." I say to him: "Don't give me the leucocyte count or the X-ray findings; let me make the diagnosis irrespective of them, if possible." I don't want to pin my faith too much to leucocytosis. That is the way I feel about it. While leucocytosis is a guide in many instances, it would not deter me from operating on a case where I had physical evidence sufficient to warrant surgical intervention. I take a strong stand in that respect.

I trust the statistics I have presented will have their effect. I was prompted to read this paper as the result of the discussion on appendicitis at the Saratoga meeting, with which I was very much pleased, from my standpoint. I felt glad from the fact that I was able to stand up and talk from antemortem and postmortem findings, while Dr. Ochsner was not. He was guessing, where I was absolutely certain as to the conditions I had to deal with.

After that meeting, an eminent physician from Chicago (I

will not mention his name), a professor in one of the leading medical colleges of that city, said to me, in regard to the starvation treatment of appendicitis as practised by Ochsner and by the general profession, that they were already beginning to see the ill effects and the increasing mortality of the disease from this method of treatment. Therefore, to go back to the old Biblical injunction, "The first shall be last, and the last shall be first," my idea was to further advocate early operative intervention; to teach the profession that we do not know the first thing about what is going on inside the belly cavity; to teach the profession it is better to take out a healthy appendix and have the patient get well than to take out a diseased appendix and have the patient die. The import of my remarks is to strengthen early operation and do away with the starvation method of treatment.

A word or two with reference to post-operative and ante-operative peritonitis, and I will have finished. I do not think there is any difference between peritonitis after an operation and a peritonitis before operation. I used to think so; but I have followed too many of my post-operative cases to the dead-house. Many physicians have said to me, "That patient has died from obstruction of the bowel," but, with few exceptions, in every case of death after an abdominal section that I have autopsied, I have found the belly containing pus, if not full of pus. Therefore, it was an infective peritonitis, and I cannot see any difference between post-operative and ante-operative infective peritonitis.

SURGICAL RELATIONS THAT THE REGION OF THE APPENDIX BEARS TO PELVIC SUPPURATION AND OPERATIVE COMPLICATIONS.

By JOSEPH PRICE, M.D.,
PHILADELPHIA.

The title of this paper takes up a simple discussion of the important complications found and dealt with surgically by removal of pathologic conditions of the right tube and ovary—a complication occurring in at least 10 per cent of suppurative forms of tube and ovary disease on the right side and occasionally on the left. In bilateral pelvic suppurations we occasionally find the appendix on the left side fixed to tube, bowel, or epiploic appendages. I have several times found it on the left side or situated in the middle of the pelvis in a tangle of adhesions; and, again, in post-operative complications, in operations done for pus tube or a hysterectomy, I have seen the appendix in many anomalous places. Only recently I found a large appendix lying across the stump of a supravaginal hysterectomy; it was strongly adherent, strictured, and constantly tugging at the cecum. It is well to be prepared for finding and dealing with anomalous positions and conditions of this character, now that we have so many operations to repeat.

In a goodly number of cases normal topographical or anatomical landmarks do not exist. Freeing the tangled bowel, relieving all adhesions, repairing all surrounding lesions, and removing the appendix puts an end to the complications. In suppurative forms of pelvic disease in the female the appendix is often removed, as it is quite commonly found strongly adherent, much enlarged, and occasionally disorganized. I have repeatedly tied off the tube and ovary, and then the appendix, without freeing the adhesions between them. The fusion of appendix to tube and ovary, all disorganized and in the midst of filth, occurred in Philadelphia, a few years ago, in the person of the daughter of a

prominent Government official. The removal of the diseased tube, ovary, and appendix, together with cleansing and draining the pelvis and groin, resulted in speedy recovery. Such operative complications are quite familiar to all of you.

The importance of removing the appendix when the slightest complication exists, and the adoption of the rule of removal whenever the patient's abdomen is opened, is a good one. I have repeatedly been asked by patients to remove the appendix, when about to open the abdomen for some other purpose. The danger is so slight, the operation so simple, so little time and surgery are required for the safe and clean removal of a very common offender, that I am strongly inclined to urge its removal in all cases while doing pelvic surgery. Again, we see a large number of patients complaining of obscure symptoms and pelvic pain, general ill health, abdominal colic, and intestinal disorders, coming from general practitioners for treatment or operation on the pelvic organs. In a good number of these cases the appendix is the cause, its removal speedily relieving the patient of all symptoms.

The symptoms are so conspicuous, the diagnostician so very confident in the male, that they are operated upon in great numbers. What a number of cases we must be overlooking in the female! I find the profession is making a more careful study of this important subject. Teachers, authors, and prominent operators have strongly advocated conservative or non-operative methods of treatment until they have lost one or more of their own children, or have been driven to adopt early operative intervention after some delay or the loss of a dear friend or relative.

The operation cannot be too early in the acute attack. It is fire department work. If done the first day, they all recover. Positive arrest of the peritoneal infection is secured, as is beautifully demonstrated in the cases operated upon on the verge of perforation. The mortality increases with the number of days of the illness. In fulminating cases it is always high after the fourth or fifth day; yet even in these eleventh-hour operations there ought not to be 16 or 20 per cent mortality, if toilet and drainage in general are complete. Exceptionally few recover spontaneously; the recurring and well-to-do cases go to health resorts or travel with an abscess in the right groin or beneath the cecum, and often die with a recurrence away from home. The operation is often charged with the death. Not so; these cases are really dying during their second or third recurrence,

and should have been operated upon on the first day of their first attack; or it may be the procedure was an incomplete one, such as the Willard Parker operation. Large numbers treated medically are reported as cures after they are dead and buried, by the man who saw them in their first attack. Again large numbers remain chronically ill, the precise nature of their trouble not being recognized by their attendant. Our present precise knowledge of the acute and chronic pathology is the result of the operations done in both conditions.

Operations upon nurses and resident physicians in hospitals demonstrate beautifully the value of early intervention; most are done on the first day. One nurse in every six in my private hospital, and in two public hospitals with which I am connected, has been operated upon for appendicitis—all early operations, without a death, and with pleasing recoveries. All of them have continued their professional work in better health than their associates. The same is the history of the operations on the resident physicians. The mortality in students in the same school or college hospital is high, the operation being commonly done two or three days later than on the residents. Treves continues to teach conservative treatment and discourages prompt surgical intervention, while he publishes a large number of internal operations with a low mortality—and it should be *nil* in such a group of cases, the death of any only due to error in diagnosis or overlooking diseased conditions of the heart or some other important organ. He makes the remarkable statement that if none were operated upon, 5 per cent only would die. If this were true, I am satisfied most prominent, successful operators would weed out the five cases for operative intervention and the ninety-five for non-operative treatment, and in all probability save the five operated upon. The diagnosis is so easy, the symptoms so prominent, that it would not be difficult to exclude the ninety-five that ought to recover without operation.

To illustrate my meaning I will cite a recent experience. I was called to Rochester, N. Y., to see a Yale student on the fourth day of his illness, dying of appendicitis; it was a midnight operation and a number of good clinicians and surgeons were present. While washing for the operation I alluded to Mr. Treves's statement and remarked that the young man belonged to the 5 per cent group; that I was satisfied all of them felt that nothing short of operative interference could save him;

if let alone or tinkered with he would surely die—with which opinion all agreed. He was greatly distended and vomiting almost continuously. A gangrenous and perforated appendix was quickly and easily removed and the dirty groin carefully cleansed. Just at this point in the operation I remarked that the procedure seemed complete, but that the general surgeon's inflammatory wall was rarely complete at either end, and that to stop there the operation had just as well not have been done. I then pushed two fingers over the ilio-pectineal line into the pelvic cavity, and a gush of dirty fluid flooded the field of operation. Probably twenty inches of adherent ileum was freed and cleansed of all lymph, the peritoneal cavity washed and drained. He will go back and finish his college course.

While speaking of the general surgeon's inflammatory wall I must call your attention to the remarkable series of four cases of appendicitis reported by Senn from the Berlin Clinic:

CASE I.—Diffuse peritonitis following appendicitis. First attack; had lasted two weeks previous to operative interference, although "the symptoms had been strong from the beginning." Vomiting and distention of abdomen gave suspicion of pus in the right iliac fossa. Long incision was followed by large quantities of fetid pus. Diffuse peritonitis was present, with no tendency to limitation. The inflamed appendix was ligated and removed. There was no gangrene or perforation. The extent of the disease was mentioned as a contraindication to irrigation.

CASE II.—Perforative appendicitis recognized on the ninth day. Pain, vomiting, and frequent eructations, accompanied by tympany and pain in right iliac fossa. The initial symptoms were mild. Large quantities of pus followed the incision; the peritoneal cavity generally dirty, and no attempt was made to cleanse it. The tissues were so much disorganized that they would not hold a ligature.

CASE III.—In this case there was doubt as to the diagnosis, the physical signs indicating an accumulation of pus in the left iliac region. Almost the entire linea alba was incised, with negative results. Then a transverse incision was made over the pubes and left Poupart's ligament, and a large quantity of extremely offensive pus was evacuated. Careful search failed to ascertain the cause, but an abnormally situated appendix was suspected as the starting point of the infection.

CASE IV.—Fetid empyema following rupture of an appendi-

cial abscess into the left pleural cavity. This case was an extremely obscure one. The patient, a young man of 16, when admitted into the hospital presented all the indications of empyema. The early history of the case was obscure. A segment of the seventh rib was excised in the axillary line, and a large quantity of very fetid pus was liberated. The patient not improving as was expected, the opening in the chest wall was enlarged by resection of the adjacent lower rib. As the suppuration and septic condition persisted, it was finally decided to follow the abscess cavity its entire length in a downward direction. The remaining lower ribs were excised and a perforation was found in the diaphragm. The abscess cavity was followed by extending the incision downward as far as the crest of the ilium. From this time the patient improved rapidly, and at the present time the enormous wound is granulating satisfactorily and promises to heal in a short time. It is believed that an appendicitis was the cause of abscess formation, and that the secondary suppurative pleuritis resulted from the entrance of pus into the pleural cavity through a perforation in the diaphragm.

I have briefly abstracted the first three and quoted entire the fourth of the Berlin cases to illustrate the rapidly destructive nature of the disease, and demonstrate, in a series of four cases, how incomplete or wholly absent is the general surgeon's inflammatory wall. In the series this point is not referred to. Our distinguished friend, Deaver, at a very late hour in his life, gives us a good paper on the general surgeon's "walled-off." My Yale student's operation demonstrates very beautifully how incomplete the wall was below, Senn's fourth case how incomplete above, and there are numerous cases quoted in papers and discussions of similar nature, one recently reported by Dr. La Place. In the cases reported by Senn we see beautifully illustrated the progressive nature of an appendicial inflammation and how speedily the general peritoneal cavity or remote points of the body may be involved. Again, we see that they are not operating sufficiently early on the Continent, as three of the four reported cases were about destroyed by the disease, the diagnosis in each case being of obscure and doubtful origin.

We have referred pointedly to the ease and facility of diagnosis in appendicitis early in the disease. This reference is made to demonstrate how little importance the teachers and authors place upon the necessity of an early diagnosis. The general peritonitis, the partial destruction of important organs,

and the invasion of other cavities would never occur if practitioners were all good, wide-awake diagnosticians and could be more speedily convinced of the importance of early operative interference.

DISCUSSION.

DR. HERMAN E. HAYD, of Buffalo.—Dr. Price's paper is one of more than ordinary interest to me, and I can agree with everything he has said, which is a pleasant position for me to assume. The most important area in the physical make-up of either man or woman, surgically speaking, is the lower right quadrant of the abdomen, and it is surprising to see how much trouble can so quickly occur in that locality. The question of diagnosis largely depends upon a man's environment and how he has been reared.

For example, contrast a general practitioner and a surgeon; the surgeon assumes everything in that territory to be appendicitis, while the man who has been devoting his attention more or less to the diseases of women contends that that is not true. Dr. Price is right in asserting that the diagnosis is ordinarily easy in these cases, but conditions occur from time to time where the difficulties of diagnosis are great. We can have in that area either appendicitis with a localized abscess, or we can have a tubal or ovarian abscess; we may find a suppurating extrauterine pregnancy, and really it is very difficult sometimes to make an accurate diagnosis. The point Dr. Macdonald brought out in his discussion, and one that impressed me very forcibly in diagnosis, is this: We cannot speculate about trouble in this region. Open the abdomen and find out! Then the question arises, where shall we open? When I am in doubt as to what exists I always open in the median line, and if I find tubal or ovarian trouble, complicated with appendicitis, it is easily dealt with through a median incision. If I do not encounter pus, I do not drain, but sew up the wound. I am particular to stop all leakage of hemorrhage, and these cases all get well. If, however, I find pus, I take advantage of the teaching of Dr. Deaver, who taught us to use gauze packs freely. I pack it in very carefully until I get it well placed, so that I am certain to protect the abdominal cavity as much as possible from infection or from rupture of a possible abscess. Next I search for the appendix, remove it if possible, break up adhesions, wash, and insert a glass drainage tube through the median opening into the cul-de-sac; make another incision in the side and put in still another drain there. I put a drain in both places, because some pus may have trickled or continues to trickle into the general peritoneal cavity and gets down into the cul-de-sac. I leave the drainage tube in front for from twelve to thirty-six hours, but the probabilities are I can remove

it at the end of twenty-four hours. The other drain is left in for two or three days, or as long as may be necessary.

DR. PRICE (closing the discussion).—The points made by Dr. Hayd are excellent. We find a great many troubles about the head of the cecum, and if any of you will follow the literature of the subject you will be surprised at the number of recorded cases and at the conditions found. Some years ago, at a meeting of the American Medical Association held in Cincinnati, Dr. McMurtry presented a paper. He had operated upon a physician in the central part of Kentucky who was said to be dying of appendicitis. He opened the abdomen and found a perforating ulcer of the cecum. He repaired the bowel, cleansed, drained, and the patient recovered. Some ten years ago a prominent business man in St. Louis was operated upon for what was said to be appendicitis. The surgeon in charge of the case, after evacuating a quantity of filth, abandoned the operation. The patient subsequently came to me, and I did a resection for sarcoma of the cecum. Notwithstanding the patient's abdomen had been opened, they still clung to the diagnosis of appendicitis. It was an easy matter to make the diagnosis when the abdomen was opened. I paid very little attention to the conditions I found, except the tumor, which was larger than my fist. I removed eight inches of the large bowel and some six inches of the small bowel, side-tracking the ileum, using a Murphy button, and he made a prompt recovery and returned to St. Louis.

I cite these two cases to show that while I do not look upon everything in the right iliac fossa as appendicitis—far from it—I yet could wish they were all cases of this disease, because it would be much easier to deal with appendices than with many of the pathological conditions we encounter.

Dr. Murphy, at the Toronto meeting of the association, in speaking of cases of appendicitis of the desperate class, referred to the alarming conditions incident to a dirty or filthy abdomen in which he found general peritonitis.

The allusion to the point of incision is important. A great many recorded deaths from general peritonitis are due largely to the fact that the toilet was a local and not a general one. A short time ago I had a case in which there was a large pus pocket. Catharsis had failed; there was nothing but fluid contents. The child was vomiting, and the symptoms were alarming. I made an incision, laid the viscera on the left side, and washed out the right kidney, after removing the appendix. I washed away the filth with normal salt solution. I then turned the viscera over to the right side of the abdominal cavity, made a gauze toilet, and washed out the left loin of the child. The little patient recovered.

There is nothing in opium, Rochelle salts, or calomel in an abdominal operation—particularly when the patient has a general peritonitis, intestinal paresis and distention, with vomiting—but delay, and I have grave doubt whether a single physician has

ever accomplished anything by administering them. I look upon it as needless delay. It gives us deaths. Let us take a typical case. A central incision, with general toilet and general drainage, will save a number of cases that many of you would consider hopeless. I entreat you to make a central incision in these dying cases, and do not turn any of them down. Dr. Murphy refused to operate on a patient on the fourth day, and waited for the sixth. I believe the man's recovery would have been more prompt had he operated on the fourth instead of on the sixth day.

DR. HAYD.—In my remarks I did not have reference to the dying cases. I meant those cases where there is a circumscribed appendicitis. Where you enter the abdomen through a central incision, and you do not know you have a complication of tubal abscess and appendicitis, and make a toilet, do you drain on the side?

DR. PRICE.—Yes. I make a second incision occasionally.

DR. HAYD.—Do you open and put a drainage tube in front?

DR. PRICE.—That question is very important in women and girls where there is difficulty attending the diagnosis, and where there is pelvic complication. But if you are familiar with drainage, you can drain in the right groin through a central incision in these cases, the complication increasing the length of the incision, using cofferdam drainage with pelvic drainage, and the results will be just as good as if an incision were made in the right groin. I will modify that statement this much: to a man with little experience in such cases, direct drainage in the groin, with a second incision, is not an objection. Some practitioners who are not familiar with drainage and with the handling of viscera will put in a cofferdam and do it very well. Many practitioners will put in a cofferdam as large as a cuff, not disturbing the peritoneum, and drain through it. I have patients in bed now without a stitch. I remember seeing Dr. Deaver deal with two vicious cases of appendicitis, the filth and pus being so offensive as to almost drive one out of the room. He did not put a stitch in either one of the patients, and they got well.

DR. DORSETT.—Do you mean flushing with normal salt solution, or mopping?

DR. PRICE.—I wash the cavity freely, using say seven pitchers of water. I have washed out the abdominal cavities of patients freely with sterilized Kansas City water, even with Topeka water, and they got well. I have used distilled water for years in flushing these cases. I have some doubt about the use of salt solution. It does the work really too well. I have had to reopen two patients twice whose abdominal cavities I had irrigated with salt solution. The bowels seem to glue together. One of the children I referred to at the Bryn Mawr Hospital I opened a second time. I found the bowel bled freely. After freeing it a second time, it did not bleed. I have some doubt as to the use and value of salt solution in the general peritoneal cavity. Pure distilled or sterilized water is sufficient; it is less irritating, and stimulating

to the peritoneum. If you will carefully observe your cases, I think you will find more bowel obstructions from the use of salt solution following operations than you will from distilled or sterilized water. Personally, I have no fear of water or gauze. I look upon gauze in these filthy conditions of the abdomen as one of the most valuable surgical dressings and drains we possess.

SOME UNUSUAL CASES OF APPENDICITIS AND THE LESSONS THEY TEACH.

By MILES F. PORTER, M.D.,
FORT WAYNE.

Case I.—Mrs. S., æt. 27, was taken with cramps and vomiting during a menstrual period when 15 years of age, and up to the time of operation had had numerous attacks of typical appendicitis. For four months prior to operation the tenderness and pain were constant. She had been in bed several weeks. On opening the abdomen the adhesions between the cecum, ileum, parietal peritoneum, and omentum were found to be dense. Attached to the cecum was a small stump, closed, which was all of the appendix which could be found. Behind this and under the iliac fossa was a small abscess, which was drained. Immediate relief followed the operation, and she was discharged January 25, twenty-five days after, with a small sinus. Six months later I learned that she had been having some pain and that the wound had again opened, but I have not seen her. Possibly the distal end of the appendix or a fecal concretion was left behind and caused the trouble to recur.

That this is probable is proved by

Case II.—Master J. J. was operated by me on June 17 last for frequently-recurring attacks of pain, tenderness, etc., following a simple drainage operation for appendicial abscess done eleven months before. While the sinus was open he was free from pain. Shortly after it would close an attack would come on, to be relieved by spontaneous opening of the abscess. On opening the belly there was found in the centre of an abscess cavity a large fecal concretion and the appendix, the latter free from all connection either to bowel or meso-appendix.

In these cases of long standing the operator should search as thoroughly as consistent for fecal concretions, and, in cases of detachment of the appendix from the cecum, for the appendix.

and, finding either neither or both, should provide ample drainage and not be in haste to secure closure of the external wound.

The appendix may become separated from the cecum and become surrounded by adhesions in a position quite removed from its normal position, as is illustrated by a case referred to me by Dr. Cook, of Bluffton, Ind.

CASE III.—The patient had presented the usual symptoms of recurrent appendicitis, save that in the last attack the pain and tenderness were widespread at first, but when I saw him several days after the onset the tenderness was very slight, as determined by abdominal palpation, and located centrally. By rectal palpation a very tender mass was found low down in the pelvis between rectum and bladder. Through the open belly this mass proved to be composed of intestine, bladder, and the rectum bound by adhesions enclosing a small, yellowish-white mass of necrotic tissue which in no way resembled an appendix to the naked eye, but which was declared to be a necrotic appendix by Dr. Rhamy, who examined it for me. The cecum, released from adhesions, showed a cicatrix marking former attachment of appendix.

CASE IV.—The next case I have to report emphasizes the more remote dangers incurred by delay in operating in appendicitis. I found the boy with an abscess of appendicial origin occupying the lower right fourth of the abdomen. His general condition was extremely bad and a simple drainage operation was done. From this he rallied and did well for two weeks, when another abscess formed in the opposite quadrant and was opened. From this he recovered completely and was enjoying the ordinary pleasures of boys of his age, when, at the supper table at the close of a hearty meal, he was taken with pain in the belly, which three days later was known to be due to bowel obstruction. The point of obstruction was located above the umbilicus. Incision was accordingly made here in the mid-line, and the obstruction, due to peritoneal adhesions, was relieved. To get the bowels back in the abdomen it was necessary to empty them through a hole cut with the scissors. His recovery was uneventful and he enjoyed good health for five years, when he had several attacks of belly pain accompanied by obstinate constipation. These attacks grew more severe, frequent, and obstinate, until finally an attack came on which failed to respond to the usual measures. A celiotomy was done, and only after nearly three hours of patient and hard work were the adherent bowels released and the obstruc-

tion overcome. It is now three years since the last operation; the boy, now a young man, is in perfect health.

CASE V.—The only case I have ever seen of what seemed to me to be appendicial colic—*i.e.*, pain in the appendix without inflammation—was that of a farmer referred to me by Dr. Hackerdorn, of Antwerp, O. The pain was extreme, but the constitutional symptoms practically *nil*. The tenderness was marked only upon rather severe pressure over a space not larger than a silver quarter. On removal the appendix seemed healthy, but contained a seed, of a kind unknown to me, which was triangular in shape with exceedingly sharp corners. The seed had produced several wounds in the mucosa of the appendix. Appendectomy was followed by complete relief. Prof. Schultze, of the Fort Wayne High School, examined the foreign body and pronounced it a seed, but could not tell the kind.

CASE VI.—I have many times found the lumen of the appendix obliterated partially at the distal end, and have often met with strictures, but never saw but one example of complete obliteration of the lumen. The patient was an elderly lady referred to me by Dr. Sprowl, of Warren, Ind. Celiotomy was done for diagnostic purposes. There was a history of attacks earlier in life that were thought might have been attacks of appendicitis. At the time of operation there were no signs of appendicitis, save a complaint of pain over the whole right side of the abdomen. On opening the abdomen the appendix was found considerably adherent, exceedingly firm to feel, and not larger than three-sixteenths of an inch in diameter. On examination after removal it was found to have no lumen, but was merely a solid cord of what seemed connective tissue covered with peritoneum. No microscopical examination was made. Whether this appendix was simply a deformed one, or whether its condition at the time of operation was the result of previous inflammatory attacks, I cannot say. That the latter is true seems not improbable from the history and the adhesions found.

CASE VII.—I was called by Dr. Harrold, of Roll, Ind., to operate on an elderly lady for an appendicitis of a week's duration. The case presented no unusual feature, save that the tumor was very prominent to sight (the belly was rather flat, flabby, and thin), and on palpation was found to be almost spherical and so freely movable as to permit of its being pushed to the left of the median line. This condition was easily understood after the belly was opened. There was a long meso-appendix and a long

meso-cecum. The inflamed appendix was found wrapped in the omentum, but there were no adhesions to surrounding structures. This case is reported because of its rarity, and because of the possible difficulty in diagnosis which such cases might present, especially if not seen until all active inflammation has subsided. I know of no similar case on record, but Dr. Ochsner, of Chicago, told me of a similar case which occurred in his practice and which was considered by him to be a malignant tumor until the operation had progressed and the infected appendix was uncovered.

CASE VIII. *Cancer of the Ileo-cecal Valve mistaken for Appendicitis.*—This case came to me for operation after having the diagnosis of chronic appendicitis confirmed by several physicians, among whom was Dr. Nancrede, of Ann Arbor. I also confirmed the diagnosis, but on opening the belly found the trouble to be cancer of the ileo-cecal valve with adhesions in the region denoting peritoneal inflammation. The tenderness, pain, etc., due to the latter condition led to the diagnosis of appendicitis. As I look back upon this case I can find some features in the case which might help me to a correct diagnosis were a similar case presented to me in the future. They were as follows: 1. The pain was too great for the tenderness. 2. There was too much loss of flesh and too much anemia to be accounted for on the ground of sepsis. The patient could get up and move about the next day after an attack of pain. So far as I could learn, there never had been any but very mild symptoms of sepsis, and yet, as indicated above, the man had lost quite a good deal of weight and was anemic—in a word, was showing the cachexia of cancer.

CASE IX.—Ethel B., æt. 11 years. Referred by Dr. Webber, of Warsaw, Ind. She gave a history of three previous attacks of pain in the appendix region, all of which had come on suddenly and disappeared suddenly after a few hours' duration at the most. One of the three had disappeared immediately after a warm rectal injection; the others had disappeared spontaneously. In neither attack was there any tenderness after the pain left, although it was present and well marked while the pain lasted. The child had never menstruated, nor did her development indicate a near approach to menstrual activity. She was of constipated habit. When I saw her, forty-eight hours after the attack came on, there was an elevation of one degree in temperature, the pulse was 100, there was some pain and exquisite tenderness in the right iliac region, with an extremely sensitive tumor just

above Poupart's ligament. It was remarked at the time that the tenderness and tumor were both rather low for the appendix. A digital examination per rectum, made without the aid of an anesthetic, was negative. I told the parents that I thought the case was one of appendicitis, but that I might be mistaken in this. However, I was positive that there was something there causing a peritonitis and that the proper course to pursue was to operate and remove, if possible, the cause of the trouble. A vertical incision through the right rectus muscle revealed a right ovarian cyst the size of a small egg, with a pedicle tightly twisted by three complete turns, and gangrene commencing. It is but right to say that disease of the uterine adnexa was thought of before the operation, and ruled out. The child made a prompt recovery. This case is interesting for other reasons, but is reported here for the purpose of emphasizing the importance of tenderness dissociated with pain in differentiating between inflammatory and non-inflammatory lesions.

CASE X.—Miss H. was seen by me at the request of Dr. Deming, of our city, on the second day of a very mild attack of appendicitis. It was the first attack. On the next day the symptoms were practically gone, save localized tenderness which was not very marked. The belly was opened and the appendix was removed. Near the distal end was a cyst the size of a large pea, with walls not thicker than the normal peritoneum. The contents were clear. It was, in my opinion, a retention cyst following inflammatory occlusion of the lumen of the appendix.

CASE XI.—This case, the last I shall report, is one of many similar ones I have had and is in no way unique, but, for reasons which will appear later, I deem it worthy of consideration. Mr. Q., a middle-aged man, was seen by me at the request of Dr. Harrod, of our city, forty-eight hours after the onset of his first attack of appendicitis. There was slight tympany, frequent vomiting, great pain and tenderness, with some hardness in the appendix region. The pain and tenderness were spreading over a greater area. Pulse was 84, temperature was 101°. He was moved to Hope Hospital and operated on at once. Some muddy serum was free in the peritoneal cavity. The appendix was gangrenous and perforated; it was removed and drainage provided for. The man made a prompt recovery. Here was a case in which the infection was already spreading, the infectious material was free in the peritoneal cavity. Had this case been put under the starvation treatment what would have been the

result? As stated above, this is but one of many (perhaps 200) similar cases that have occurred in my practice in which there was infectious material free in the peritoneal cavity, the symptoms and appearances inside the belly indicating a widespread and rapidly-spreading virulent infection. Will any mode of treatment give these patients as good a chance to recover as will the operative treatment? Can any treatment corral germs distributed over a large part or the whole of the peritoneum, and pen them up in a small corner and keep them there? No one doubts that the majority of cases of suppurating appendicitis will result in circumscribed abscess if properly treated, but is there any medical treatment which will lead to this result in all cases? Can those which can be made to yield this happy result be differentiated from those which cannot be made thus to yield?

As for myself, I want the truth, and am free to confess that my own experience is perhaps not sufficient to base conclusions upon; but I am of the opinion that the case last narrated would have ended fatally had it not been promptly operated; that the sooner a case of appendicitis which is growing progressively worse is operated the better; that no man can tell in a given case the pathologic changes that have taken place until he sees them.

DISCUSSION.

Dr. Washington H. Baker, of Philadelphia.—I would like to answer to the question which was asked, that neither mode of treatment would relieve the patient, and I am thankful to be supplied with such an excellent illustrative case as the one mentioned. In that patient the pain was not in the appendix; it was due to reflex symptoms. The irritation was transmitted from the appendix to the intestines reflexly, and produced intestinal colic; and the indication was not an operation, but to relieve, to help the great effort nature was making to get rid of some irritating influence there.

Whenever the system makes a decided effort in any direction, I feel it is my duty to do all I can to further that effort, and I feel that I am proceeding naturally and to the great advantage of the patient, and I would not institute any procedure in opposition to that until my efforts have entirely failed. Nature gives us an intimation, and what we want to do is to supply what is lacking. We must not force nature, but aid her. That is my idea in all medicine, and our methods ought not to be artificial.

They ought to be as natural as it is possible to make them. In one of the cases referred to, it was evident that there was great irritation which demanded relief. Hydragogue cathartics, with possibly the addition of some other agent, would have produced decided peristalsis, and in all human probability the foreign body, if any, would have been extruded; the next thing would be to reduce the inflammation, which once done the patient would get well.

Why does the surgeon operate? For two reasons: one is because of inflammation. The second is, that there is sepsis—not always a pure septicemia, but always a sepsis. If it is not a pure septicemia it is an obscure poisoning by ptomaines. The equilibrium of the system is disturbed. Foods that are ordinarily digested perfectly are imperfectly digested, and there is poisoning of the system in addition to the inflammation present. Now, what does the surgeon do by operation? He endeavors to remove inflammation and sepsis. If he does, his patient gets well. How would you make an operation unnecessary? By removing inflammation and sepsis. That is what I have done and tried to do, and in a number of cases operation was not necessary.

I want to say a few words about cathartics. I believe my treatment of some of these cases to be unique, and I do not know of anybody who treats them just as I do. It is not the starvation treatment, that has been spoken of here, because I never heard of it until I came to this meeting. I feed in all cases of appendicitis, and I use the best that is on the market, in appropriate quantities, and, I was about to say, these patients all recover. I use sulphate of magnesia in these cases, and why do I choose it? Because I was told by a chemist that in using this agent we have what he called hydrosulphuric acid, which is largely antiseptic, and we therefore get antisepsis and purgation.

What does leucocytosis mean? It means that there are millions of warriors poured out to destroy the disease germs, and if I can only get enough warriors, I do not care how numerous the enemy is, I am bound to win if I have skill to dispose of my forces properly. That is what I try to do. If I have only reserves enough, I can conquer with skill any force that is sent. If you were to attack a citadel you would not assail the strongest part. I would take plenty of time to find out the weak parts. I would then exert all my force in every way against the weakest portion. I heard Seth Low make a speech that I shall never forget. He said his policy was to work in the direction of least resistance. I thought that was one of the wisest things I ever heard. You can accomplish most with a given force where you have the least resistance.

Dr. John C. Sexton, of Rushville.—I do not care to take up but a moment's time in discussing this paper. I believe it is the sense of the Fellows of the association that it would be a backward step to delay operation in cases of appendicitis. Dr. Deaver this morning told us that out of seventeen cases, desper-

ate ones, he lost six. I believe it would be a backward step if we adopted the so-called starvation or waiting plan.

There was one thing said this morning about pus in the pelvis and general purulent peritonitis of which I desire to speak. In some cases of appendicitis it will be difficult to find pus. In the fulminating form of the disease you open the abdomen, and you find a large amount of dirty-brown, watery fluid, but no pus, and, on account of the epithelial plate being stripped off or eroded, absorption takes place and these patients die; whereas, if it has not broken down into a dirty-brown, watery fluid, there is still a chance to save the patient, because the epithelial plate has not been taken off, leaving an absorbing surface. To wait any great length of time with the hope that there will be less probability of erosion of the epithelial plate or the epithelial surface is wrong policy. I believe it is our duty to continue along the old line. which we have fought over so long—namely, to operate on every case of appendicitis as soon as we see it.

FOUR CASES ILLUSTRATING THE DIFFICULTIES OF DIAGNOSTICATING APPENDICITIS.

By WILLIAM WOTKYNS SEYMOUR, M.D.,
TROY.

My excuse for presenting a paper founded upon so few cases is that they are to be taken as the text of my remarks and to elicit discussion.

For some years I have been greatly impressed, on listening to and reading society discussions, with the apparently current opinion that appendicitis was one of the easiest of diseases to diagnosticate. While this has been my experience in most cases, yet there is also a considerable percentage of cases which in their very inception simulate very closely appendicitis of such severity as ordinarily to require operation. These cases of simulated appendicitis may be divided into two great classes—those actually of the right iliac fossa, arising from inflammation of other organs than the appendix, and those more misleading cases, from the purely diagnostic standpoint, in which severe symptoms of abdominal trouble appear and yet the actual disease is an effusion in the chest or an inflammation of the lung of the same or even opposite side, without any actual implication of the appendix. If Richardson, with a personal experience of between two and three thousand cases, can be mistaken in diagnosticating as acute appendicitis a case of inflammation of the right pleura, it seems that everyone dealing with appendicitis should have burned into his memory the existence of such treacherous cases of mimicry. Unless this is done, sooner or later our preconceived opinions, distorting our judgment, will lead us into the temptation of doing an operation for appendicitis where none exists and where no operation is needed.

Case I.—Mrs. Florence A., aged 19 years, Armenian, 4 feet 6½ inches in height, weight 90 pounds, was delivered by a colleague of a dead child, after a severe labor, on December 26, 1900,

by high forceps. The hospital records give no details of the delivery or the condition of the fetus. On January 4 she was transferred to my care and almost immediately had a chill and high temperature; my colleague who delivered her said she had already had a sudden elevation of temperature with an equally sudden fall, and regarded this as due to nervous excitement. He having just examined the patient, I refrained from so doing. The next day the temperature was 103.5° and pulse 120; marked tenderness under McBurney's point, no dulness, some muscular spasm. Vaginal examination negative, save the womb was tender on elevating the cervix and the pain referred to the right side. My diagnosis was septic infection, probably of tube and ovary of right side, with a possible involvement of appendix. Immediate operation disclosed absolutely normal tubes and ovaries, no involvement of the appendix, but a sloughing, gangrenous fibroid, the size of an English walnut, in the right anterior wall of the uterus below the attachment of the round ligament. This I enucleated, and, after cleaning out its bed and stitching it over, I drained with gauze drains and the patient made a good recovery, to require at my hands an operation for post-operative hernia in March of this year and an elective Cesarean section for a conjugate of less than eight centimetres in July. Mother and son are now well.

CASE II.—Lottie B., married, aged 23 years. Four months after delivery was operated upon by a colleague for an abscess of the right iliac fossa with the ante-operation diagnosis of appendicular abscess. A large abscess was evacuated and drained, but no appendix found, and the post-operative diagnosis appendicular or tubal abscess from infection made. Four months later the patient entered my service because a sinus in the scar was still discharging and annoyed her. She had no pain, but a soreness, and wished to be relieved of the sinus. She was up and around the wards during my visits, so I missed her for a few days, and then had my attention called to her for intense pain in the right iliac fossa, tenderness under McBurney's point, rigidity of rectus muscle, and an extensive mass immediately beneath the cicatrix of the former operation. I believed I had to deal with a recrudescence of the appendicular abscess. At 11:30 A.M. her temperature was 103° and pulse 120, and I appointed 3 o'clock P.M. for operation. At 2:30 P.M. I was telephoned that her temperature was 107° and pulse 180, and was asked what I intended to do. My reply was that if at 3 o'clock she was living

I would operate. A 3 P.M. the temperature, taken with three thermometers, was still 107° and pulse from 180 to *nil*. After a hypodermatic of morphine and atropine, an oblique incision was made parallel to the former scar, but internal to it, and the belly entered and walled off with gauze. After evacuating several ounces of offensive pus I enucleated a solid suppurating tumor of the right ovary the size of my closed fist. Gauze drainage was used and the patient made a good recovery. The operation was completed in nineteen minutes from start to finish, and the patient's condition was actually better on leaving the operating room than when she entered. Never before have I seen such a temperature in a surgical case, and I felt that on thorough, rapid work her future depended.

CASE III.—I was asked by a very accurate friend, practising in the country eleven miles from Troy, to see with him a case of appendicitis and to come prepared to operate. The patient, a young woman of 25, who always had had pain and distress at her periods, had been unwell ten days before my visit and the period had lasted the usual time. Five days before my visit she was taken with a severe pain in the *left* side which lasted several hours and was only quieted with morphine. Three days later she had a similar attack, but not so severe. The pain then was referred to the *right* side, which was tender and rigid. The day before my visit a distinct mass was to be felt in the right iliac fossa and there was marked tenderness under McBurney's point. At times the pain was paroxysmal and severe and referred to the right side, but at the time of my visit the pain was slight, although the tenderness was marked under McBurney's point and there was some rigidity of the muscles. The temperature, however, was normal and pulse 80. A mass, though, as large as my closed fist, lay in the right iliac fossa. This the attendant declared to be twice the size which it was at the visit the previous day. This statement, together with its apparently close connection with the uterus, its closely following upon the usual painful period, the absence of chills and temperature, led to the probable diagnosis of ovarian tumor with twisted pedicle. The patient's house and circumstances precluding a satisfactory operation and care so far from medical attendants, I advised her removal to the Samaritan Hospital in Troy, where two days later, October 17, 1901, I did a celiotomy, which disclosed an ovarian cyst of deep claret color, flecked with black, holding nearly a quart. The pedicle was twisted one and one-half times. The tumor was the

left ovary, and the torsion of the pedicle had led also to a torsion of the uterus, so that the right border of the uterus was directed against the anterior vaginal wall. The removal was very simple and the recovery prompt.

CASE IV.—June 14, 1902, I was asked to see Miss B., 20 years, single, whose previous medical history, apart from irregular menstruation, had been excellent. Her periods came every four next day the temperature was 103.5° and pulse 120; marked discomfort nor flow. Her last period, several days ahead of time, lasted six days, with considerable flow, and ended June 7, 1902. June 8, the day after the period ceased, she began to have general pains, not merely in the joints of the extremities, but also the abdomen. Bowels and bladder acted normally. At the time of my visit the temperature was 101°, pulse 120, respiration 18; there was no nausea nor vomiting, but great complaint of constant pain in the right iliac fossa, with paroxysms of epigastric pain. The liver and spleen were normal and no tenderness over the region of the gall-bladder. McBurney's point was exquisitely tender, and the immediate neighborhood also tender but in a less degree. There was no muscular spasm and no tumor could be made out by gentle percussion or palpation. The rest of the abdomen was free from sensitiveness. Examination of the lungs disclosed no dulness anywhere, but at the base of the *left* lung behind there was an increased vocal resonance to both spoken and whispered voice and an occasional sibilant râle. The uterus was normal and no evidence of ovarian or tubal trouble nor exudate. I could not believe the case to be one of appendicitis. On my evening visit I found the temperature 102°, pulse 120, respiration 20. The abdominal tenderness, however, was somewhat diminished. Some sibilant râles were to be heard over both backs. June 15: the abdominal tenderness vastly less, no muscular spasm, sibilant râles over both chests, front and back, on deep inspiration, no dulness nor vomiting. June 16 the temperature, pulse, and respiration were normal and all tenderness about McBurney's point had disappeared. Now there was cough, but without expectoration, and a few sibilant râles in each chest. Some tenderness continued along the descending colon and sigmoid flexure, which, however, disappeared after a copious enema. From this on the restoration to health was rapid.

Was the pain in the appendicular region in this case to be referred to the action of some toxin similar to that of the so-called rheumatic cases of appendicitis, or was it mimicry pure and

simple by reason of the usual localization of pains which at first had been articular? So strong an impression did the case make upon me at my first visit—especially as I had only a few days before read Maurice Richardson's article from the *Boston Medical and Surgical Journal* of April 17, 1902—that I saw the patient several times that day, for fear that I might, in my hesitancy, be caught napping by a case of appendicitis requiring prompt operation. The other three cases all called imperatively for operation, although in none of the three was the appendix involved. Apart from the high temperature, 107°, in Case 2, which I have never before seen in an operative case, there was nothing very remarkable. Yet each of the three cases furnished conditions in the right iliac fossa easily confused with appendicitis, but at the same time imperatively requiring operation for the dangerous condition existing. Time and again I have been in grave doubt whether I had to deal with a stone in the right ureter at the pelvic brim or a case of chronic appendicitis, and I cannot believe that the diagnosis of appendicitis is as simple as many of the discussions would imply.

The investigations of Arthur Keith, undertaken at the request of Sir Frederick Treves, as to the anatomical relations of McBurney's point,[1] show that this point is far from indicating the location of the base of the appendix, as has been claimed, but that in most cases it corresponds to the site of the ileo-cecal valve. Tenderness of this point is found in many other conditions than appendicitis. A wise scepticism is well to inculcate regarding this very generally cherished symptom. Far be it from me, believing as I do in early operations, to inculcate timidity or hesitancy in operation. However, I believe that if we, as a profession, are to progress, we must from time to time take soundings to learn whether our accepted landmarks give us the true range by which to pilot our ship into a safe harbor.

DISCUSSION.

DR. JAMES F. BALDWIN, of Columbus.—One great difficulty in making a diagnosis in many of these cases is that the splanchnic nerves know so little anatomy. In the beginning of an attack of appendicitis the pain is almost invariably felt in the pit of the

[1] British Medical Journal, June 28, 1902.

stomach, and the patient and his physician, unless he be accustomed to seeing such conditions, regard the case as one of colic. I have had within the last year two cases especially illustrative of this point. One patient was a very intelligent man, who had had several attacks of severe pain in the abdomen, which he located to the left of the umbilicus. In one of these attacks the attending physician made a diagnosis of appendicitis, and sent the man to me. The symptoms by this time had subsided, but I was able to feel on the right side a nodule about the size of a walnut. I obtained the history of the symptoms carefully, agreed with the diagnosis, cut down at the point indicated, and found a gangrenous appendix with a mass of adhesions and a fecal abscess. The appendix was removed and the patient recovered. Instant relief of the pain which he had been having on the left of the umbilicus followed the operation.

In the other case, an unconscious man was brought into the hospital in a moribund condition. Three years previously, I was told, he had been operated on for appendicitis. He had been complaining for a week of pain in the splenic region, and here mustard and hot applications of all kinds had been applied, without relief, and collapse suddenly had come on an hour before. There had been complete obstipation for one week. After a careful examination I told his physician that undoubtedly we would find intestinal obstruction due to bands from the old appendicitis. He was moribund, as I before remarked, dying in about two hours, and at the postmortem examination everything in the region where the pain had been located was normal, while a loop of gangrenous intestine was found under an old appendicial band.

Dr. W. E. B. Davis, of Birmingham.—From the discussion this morning one would naturally draw the conclusion that the diagnosis of appendicitis was a very simple matter in all cases. While it must be admitted that it is comparatively easy in a large proportion of cases, there are other instances in which it is exceedingly difficult to diagnosticate appendicitis. The gall-bladder has given me a good deal of trouble. In a number of cases in operating for this condition I have made the incision high, so that I could, if necessary, reach the gall-bladder. I must say, however, that in gall-bladder cases there is not the same amount of rigidity of the abdominal muscles that we get in cases of appendicitis, and in making a differential diagnosis between kidney stone and appendicitis, or any intrapelvic or abdominal inflammation, this is a very important point. There is not much rigidity of the abdominal muscles, if any, in kidney stone; but there is always rigidity of the abdominal muscles in cases of acute appendicitis.

Speaking of the desperate cases in which it is a question whether we have peritonitis from appendicitis or mechanical obstruction of the bowel, I do not believe it is usually a very difficult thing to make a diagnosis. At any rate, the surgeon

who has seen many cases of mechanical obstruction of the bowel would have little difficulty in making a diagnosis. But in mechanical obstruction of the bowel, where there is extension of the inflammation from colon bacillus infection, after the infection has passed through the bowel and we get a general peritonitis, we have two conditions to deal with, and the diagnosis then is very difficult.

Reverting to the diagnosis in the mild cases of appendicitis, I believe a blood examination is a great aid to us. In a case of appendicitis of any consequence we will always find considerable leucocytosis, and that would lead me to operate in some cases. If I had a case of appendicitis in which I found marked leucocytosis, I would urge operation more energetically. A blood count is helpful to us in many conditions. In differentiating between appendicitis and kidney stone it would be of great assistance. We do not find the same amount of leucocytosis in ordinary cases of gall-bladder colic as from cholecystitis.

As to the severe cases, where there is no leucocytosis they are practically dead, so to speak. They are overwhelmed with sepsis and further resistance is impossible. It is true, these cases recover now and then, but as a rule we do not expect them to do so. There are other cases that lead us to believe that we have serious intra-abdominal trouble to deal with, and something promptly should be done for them.

DR. J. HENRY CARSTENS, of Detroit.—This paper is a very interesting one, and I am very glad that it has been read, especially after what Dr. Price said this morning, and I am sorry that he is not here to listen to this discussion. The diagnosis of appendicitis is not always easy, particularly for the general practitioner. We are all liable to make mistakes. During the last year I operated on what seemed to be two of the clearest kind of cases of kidney stones, and yet both proved to be appendicitis.

I am sometimes called to operate on a case diagnosticated as obstruction of the bowel, and I find it to be an ordinary, plain case of appendicitis. But the general practitioner has diagnosticated it as obstruction of the bowel. There was obstruction of the bowel, but it was secondary to peritonitis, the bowel kinking and causing the obstruction. I am called to operate for appendicitis in other cases, and I find them not to be appendicitis, but intestinal obstruction. It may be some child who has been overeating, who has been loading up the bowel, or possibly there has been constipation and the resulting absorption of excrementitious matter has produced toxemia which simulates appendicitis.

I want to say a word about the blood test. You examine these cases, and you may find leucocytosis, but no pus, no bacterial infection. The appendix is all right; there has been obstruction of the bowel from some cause or other. How would you diagnosticate one from the other? I do not know. Perhaps the bacillus coli communis in the bowel will produce some kind of

toxin; when it does not get into the peritoneal cavity the results and symptoms are alike and there is the same difficulty attending diagnosis. The ordinary run of cases we can diagnosticate. In my region of country the general practitioner is so educated that he is always looking for appendicitis. I preach it in season and out of season—peritonitis *is* appendicitis—and if the general practitioner only makes a mistake in one case out of twenty-five, he is doing very well.

Dr. Walter B. Chase, of Brooklyn.—After what we have heard to-day, we may or may not think the question of diagnosis of appendicitis is an easy matter. But certainly we have to be on our guard at all times. It behooves us in these cases not to make a superficial examination and reach the conclusion that there is nothing serious present. I am sure we have been surprised at times that we did not detect evidences of what later proved to be appendicitis, and we felt it due to lack of proper investigation on our part.

Regarding those cases of the milder variety and in which the symptoms are not pronounced, there has been one point in the diagnosis alluded to which I wish to emphasize. Dr. Davis referred to rigidity of the abdominal muscles, the muscular structure indicating trouble underneath. There is a great deal of force in that. If the right or left ovary is involved, the rectus muscle on the corresponding side is sufficiently rigid to prevent the production of pain by its rhythmical respiratory movements. I remember a recurrent case that came under my observation, and, while the history pointed to appendicitis, the pains were entirely on the other side, just as in the cases of the essayist. The pain may be located in the stomach or elsewhere. If you uncover these patients and watch the respiratory movements carefully, you will find that the abdominal movements are diminished or arrested on the right side.

Dr. Miles F. Porter, of Fort Wayne.—I will admit that an accurate, scientific diagnosis is impossible in many cases. As a rule, however, I believe a diagnosis of appendicitis is made with comparative ease. On the other hand, there are times when an absolutely positive diagnosis is an impossibility, but a diagnosis sufficiently accurate for a working basis can usually be made. It does not make much difference if a diagnosis of appendicitis should be made in a woman and on cutting down tubal trouble should be found on that side. The abdomen should be opened in such a case at any rate. It is a nice thing to make a positive diagnosis, but this is only easy with one class of men—namely, those who have never seen the inside of the belly more than two or three times. It is easy to talk about, but not an easy thing to do.

One point in connection with the cases mentioned: my observation has been, concerning cases of mechanical intestinal obstruction, that when the patient comes to you the disease may have advanced so far that a complete diagnosis is impossible from

the physical conditions present. But cases of mechanical obstruction do give a history, if it is obtainable, of intense colicky pains coming on periodically and at intervals, unaccompanied for some time by tenderness on pressure. This is a history which you will get in nine-tenths of the cases of mechanical intestinal obstruction. What is the difference? After all, if the cause of the obstruction is paresis of the bowel, you will need to open the abdomen. If the obstruction is due to a band, you open the abdomen, and for practical purposes the diagnosis is easy. It did not make any difference in the case of the essayist. He found a suppurating ovary and removed it. It is not a good plan to have it go out as the sense of this meeting that these cases are difficult to diagnosticate.

DR. L. H. DUNNING, of Indianapolis.—I think all of us who are doing abdominal sections meet with difficulties in diagnosis in cases of appendicitis. The greatest difficulty I have encountered has been in cases where there were clear indications for opening the abdomen. Not long since I encountered two cases of gallstones. The gallstones were displaced and surrounded by adhesions, fixed low down in the appendicial region, quite as low as one would expect to find an accumulation of pus. The patients exhibited the physical signs of having pus accumulation, yet when the abdomen was opened we found gallstones with a little fluid in the gall-bladder.

Other cases in which the diagnosis may be attended with difficulty are those of perinephritic abscess. I encountered one case of that kind, where, previous to operation, I was quite certain I had a post-cecal appendicular abscess, but it turned out to be a case of perinephritic abscess. I encountered one case of small ovarian tumor with long pedicle that had suppurated, and which was similar to the one described by the essayist.

I believe we ought to remember two landmarks in all cases of appendicitis. We know very well that idiopathic peritonitis is a rare occurrence. It seldom or never occurs. It is the same old question that has been brought up and discussed for a hundred years, as to whether there is ever such a thing as idiopathic peritonitis. I doubt if there is. But peritonitis usually starts at one of four points; these are the regions which should be investigated thoroughly in abdominal troubles of an inflammatory character. They are, the right inguinal region, the hepatic region, the region near the splenic flexure of the colon, and, lastly, the pelvic region. I do not believe that in a patient having fever and an acute illness beginning in the right side, particularly in a woman, we can safely make a diagnosis of appendicitis without a pelvic examination. Once in a while it is a surprise to make an examination of that kind and find the tube and ovary affected instead of the appendix. There are palpable signs of disease in the pelvis. Of course, there are frequently associated symptoms which we cannot differentiate or we cannot estimate the influence of each form of trouble, but we can de-

termine whether the case is clear for operation. A rectal examination should be made in every case.

Regarding the matter of obstruction of the bowel, we have obstruction due to inflammation of the appendix which, as a rule, is septic in character. With a septic paresis to contend with, there is a more uniform distention of the abdomen. In mechanical obstruction there is always exaggerated vermicular action. There is one other point that has not been mentioned which, in the early stages, is a great aid, and that is, increased sensitiveness and intestinal movements at the point at which it starts; and these two points, if carefully observed, will enable us, as a rule, to diagnosticate mechanical intestinal obstruction.

DR. WALTER P. MANTON, of Detroit.—While Dr. Seymour was reading his paper, I thought to myself that the man who was always able to make a correct diagnosis deserved to be translated and wear a crown. I do not think anyone can do it. The general practitioner hears so much about appendicitis in these days that he is becoming educated, and, as a rule, can make a fairly accurate diagnosis in the acute cases. In my own experience it is the chronic cases, without pus formation, where the mistakes occur. McBurney's point is not reliable for diagnostic purposes, and I find that the general practitioner, if he does not find or locate pain at this point, is very apt to conclude that the patient has not appendicitis. Take an elongated appendix, with its tip agglutinated to the fundus of the bladder; the patient may not have pain in the appendicular region, but he does have severe pain in the bladder region whenever the latter is emptied. In the same way, where the appendix is attached to a coil of intestine on the left side, my experience is that we rarely find pain on the right side. Even in cases where there is pus formation we frequently find all of the pain referable to the left side.

In a great many cases where the pain is most severe there is absolutely no tumor. There are, perhaps, numerous adhesions binding the appendix down, and the patient suffers intensely. As a bystander I have seen operators consider an appendix as healthy because it appeared so macroscopically, and return it to the abdomen. I have found, however, in many instances where the appendix was apparently normal, that the microscope showed the condition to be a serious one. We may have an ulceration, perhaps due to an enterolith—a concretion in the lumen of the appendix—which, although possibly small, may, as the result of pressure on the mucosa, have caused gradual ulceration, extending down even to the serous coat. Such a patient, even without the formation of pus, is in a serious condition, and the sooner the appendix is removed the better. I find in a fair percentage of chronic appendicitis in women that the appendages of the right side are also involved. In the acute or chronic cases, with a careful scrutiny of the physical signs and symptoms and a careful pelvic examination, there is very little excuse for making a mistake in diagnosis.

DR. JAMES F. BALDWIN, of Columbus.—I wish to put on record an interesting case that came under my observation two or three months ago. The patient was a young man, 35 years of age, who, as I was assured by himself and his friends, had been in his usual health until one week before I was called to see him. He was then seized with severe pain in the pit of the stomach, followed by vomiting. A physician was summoned, who believed that he had beginning appendicitis. He gave him a cathartic and saw him in the evening, when he felt so much better that he was dismissed. The next morning, still suffering, he sent for his regular attendant, who concurred in the previous diagnosis. The patient became steadily worse, with persistent vomiting, abdominal distention, and great pain. When I saw him he had been hiccoughing for two days, was almost pulseless, bathed in profuse perspiration, and with absolutely no peristalsis, but great tympany. When the physician saw him the second morning, he complained of pain in the right side, low down, but did not complain of much pain anywhere else, though the whole abdomen was tender. After eliciting this history, I concurred with his physician that in this instance we had to deal with a case of general peritonitis following appendicitis. Considering the patient's general condition and the most unfavorable surroundings, I did not think an operation was indicated. He died soon afterward, and the autopsy showed general peritonitis, as had been anticipated, from rupture of the head of the colon, together with fecal extravasation, the result of obstruction of the transverse colon due to an annular cancer which had so constricted it that the little finger could not be passed through, and besides his liver was full of cancerous nodules.

Here was a case which I do not think anybody could have diagnosticated. The young man was apparently in perfect health a week before, and yet the cancer was far advanced.

DR. SEYMOUR (closing the discussion).—I do not for a moment wish to be understood as advocating delay or discouraging prompt operation in cases of appendicitis, because it has been instilled into me from childhood that the proper thing is to operate early on these cases.

As long ago as 1857 my father advocated operation in these cases. In 1880, while a student in Vienna, I had an attack of what was then called typhlitis and I sent for my friend M. Holl, now Professor of Anatomy at Gratz, telling him that I believed myself seriously ill with typhlitis and had sent for him not only as a friend but as a surgeon, and that I had not sent for Billroth because, although I knew he would come to me, he would pay no attention to my opinions. I also told him that one of my old schoolmates was lying in the Protestant cemetery, dead with typhlitis and unoperated upon, and that I did not wish to join him. I asked Dr. Holl, provided I was not better within forty-eight hours, if he would open my belly and give me a chance for life. After carefully examining me, concurring with my diagno-

sis, and after some reflection, Dr. Holl said he thought it might be a proper thing to operate and he would do so.

Operation was not necessary, and looking back at the surgery of those days I am glad it was not deemed necessary. Some years later I developed gallstones, and the question has since been raised whether the attacks of 1880 were really due to typhlitis or gallstones.

Our aim should be to educate the general practitioner to promptly recognize appendicitis. I formerly operated upon a number of cases for friends in which they overruled my opinion for early operation, and I lost almost every case. Afterward, when I had advocated operation and was overruled by attendant or patient, I let them bear the odium and some other person the responsibility of pulling their chestnuts out of the fire. My results from early operation have been excellent. I think it a mistake to expect country practitioners to pay much attention to leucocytosis. We must point out the best clinical methods of diagnosis and the pitfalls which may beset the careless. And at the same time we must be honest in declaring that we cannot in every case be cocksure of a diagnosis. We often may be in doubt about the exact nature of a case, even though the propriety of a life-saving operation is absolutely indicated.

INTRAUTERINE FIBROIDS COMPLICATING PREGNANCY, AND RETAINED PLACENTA ASSOCIATED WITH INTRAUTERINE FIBROIDS COMPLICATING PREGNANCY—CASES AND TREATMENT.

By MAGNUS A. TATE, M.D.,
CINCINNATI.

A PERUSAL of the literature at my command on the subject of intrauterine fibroids complicating pregnancy reveals two things: first, that I am dealing with an extremely rare condition; and, second, that the literature on this subject is very meagre. I am unable to state the frequency of intrauterine fibroids complicating pregnancy, but that I am dealing with a great rarity when the case is further complicated by the placenta being retained is shown by my inability to find more than two cases besides the two that I report. Intrauterine fibroids complicating pregnancy may give rise to hemorrhage before, and often to alarming hemorrhage after, the birth of child and placenta, as some of the cases reported will show. It is reasonable to suppose that the presence of a foreign body in the uterus, such as a fibroid, will naturally interfere in many cases with the child assuming the normal position, and that the breech may present nearly as often as the vertex. This is mentioned by Lefour in his thesis, where he places abnormal presentations in the following ratio: vertex 50.58 per cent to breech 32.25 per cent. It is also reasonable to suppose that an intrauterine polypus (and especially if it be of any size) will be a prime factor in the causation of an interruption of pregnancy, and this is shown in the history of some of the cases mentioned; but, on the contrary, Lefour (who is quoted by Budin) shows that pregnancy is frequently not interfered with, however profuse the hemorrhage. If hemorrhage does

occur it often corresponds to the menstrual epoch, and, unless excessive, simulates menstruation, and in this way is misleading. Hence a proper diagnosis is not made (if at all) until after an abortion, late in pregnancy, or after birth of child and placenta. In cases where pregnancy has gone to full time it is surprising to note that so many of the labors were normal, the polypus not being discovered until after the birth of the placenta, when one would expect that labor would not only be difficult and prolonged, but that there would be a further complication, namely, that of improper contraction of uterine muscle. Whenever involution is interfered with a secondary hemorrhage is a common sequel. The results of feeble contraction of uterus during labor, and improper involution afterward, may be contaminated blood clots and a gangrenous polypus (especially if there has been any injury during labor), and these in turn followed by sepsis. If added to this the placenta in part or whole be retained, the patient is indeed a fortunate woman if she escapes with her life from severe septic poisoning. When there is much disturbance of pelvic circulation, it is followed by a serous infiltration which gives rise not only to a slight enlargement and softening of the polypus, but the uterus becomes heavy, boggy, and flaccid, and so does not contract properly to any form of treatment; and this explains why the patient succumbs to uncontrollable hemorrhage. In a few cases the tumor extrudes spontaneously from the uterine cavity, and then it becomes a simple one to manage. Ligate and cut off the pedicle. If the os is not yielding and the growth remains in the uterus, it is very difficult, if not impossible, to remove it. Here the wisest course is to let it alone and not resort to any surgical measure. The placenta remaining in a uterus which contains an intrauterine fibroid is a serious menace, for the longer it remains the greater the danger, primarily of hemorrhage and secondarily of sepsis. Hence the sooner the placenta is removed the less the danger, the better the treatment, the easier the patient's mind, and the surer the chance of recovery.

Queries which are of much interest to science are: Does the existence of pregnancy originate polypi or were the polypi minute growths existing before pregnancy and then developed rapidly with the advance of gestation?

The following cases I take from the paper written by J. Halliday Croom. (1) Ramsey: Submucous pediculated fibroid; hemorrhage; expelled spontaneously, although gangrenous, on

the tenth day; recovery. (2) Sedgwick, (3) Maunvoury, (4) Ashwell: Reported cases. (5) Tarnier, (6) Fallin, (7) Oldham, (8) Priestley, (9) Valtorta: Tumor expelled by simple uterine contraction without either being gangrenous or decomposed. (10) Martin, (11) Horwitz: Tumors became gangrenous, gave rise to septicemia, with a fatal result. (12) Kuchenmeister: Tumor expelled the fourth day post-partum, after giving rise to a high fever from suppuration. (13) J. Halliday Croom:[1] Fetus expelled at the fifth month, followed by profuse hemorrhage; tumor removed by evulsion; on the fourth day the discharge became very offensive, and patient died on the eighth day of septicemia; the septicemia due to either gangrene of stump of tumor or a second polypus becoming gangrenous through admission of air. (14) J. Halliday Croom: Case seen in consultation with Dr. Playfair; followed a normal labor; profuse hemorrhage on fifth day, due to a uterine polypus, which was removed by twisting, and a perfect recovery followed. (14) Senderling, (15) Yeld, (16) Kiwisch: Reported cases. (17) Wynn Williams: Case of difficult labor, and in trying to break up the child a large submucous tumor obstructed, which was enucleated, and recovery of patient followed. (18) Duncan reported a case. (19) Weber: Child had to be turned to be born, from the presence of a tumor, which polypus was removed at the same time with placenta. (20) Simpson, (21) Underhill: Reported cases.

These 21 cases were grouped by Croom as follows, he also making the statement that the above were all of the cases reported that he could find to date (1885): (1) Non-gangrenous cases, in which a healthy tumor expelled without any artificial aid, 5; (2) gangrenous, 6; (3) gangrenous or non-gangrenous removed artificially with hand or instrument, 10—total, 21.

I have collected the following cases.

1. D. Macgibbon:[2] Labor on December 24 was normal and recovery satisfactory. Patient was up and attending to household duties. January 3, had an attack of measles; recovery. January 21, had a uterine hemorrhage. February 3, passed a small uterine polypus; recovery.

2. Budin:[3] Great difficulty in removing child; had to be done by separating arm from body with scissors. An intrauterine

[1] Edinburgh Med. Journal, 1886.

[2] New Orleans Med. and Surg. Jour., 1852-3.

[3] American Journal of Obstetrics, 1884.

fibroid was discovered, but patient left hospital, not allowing tumor to be removed.

3. T. Gaillard Thomas:[1] (1) Case of repeated abortions due to fibrous polypus, which was removed by twisting off pedicle, and case recovered. Attention was called to the sanguineous flow after supposed recovery. (2) Large submucous fibroid discovered after delivery. All efforts to stop hemorrhage by two practitioners were of no avail and patient died.

5. T. Reber:[2] (1) Patient aged 34, multipara, aborted at fifth month; fetus softened and discolored. Following placenta, a dangerous flooding. Upon introducing hand two submucous fibroids were found which had a broad base. Long-continued efforts, internal and external, such as cold and ergot, produced partial contraction and arrest of hemorrhage. (2) Patient aged 30, primipara. Small submucous fibroid existed before marriage and grew rapidly after marriage, but, under treatment of iodides and ergot, diminished. Patient became pregnant and at the seventh month gave birth to child which lived a few hours. Life of woman was endangered by profuse hemorrhage following the delivery of placenta, but after several hours hemorrhage was controlled. Patient's recovery was slow but complete. The same patient became pregnant again, went to full time, gave birth to twins (breech presentations) with little difficulty. It was now found that the tumor had grown and involved a large part of the uterus. The placenta was not removed for one hour, and when removed a most fearful hemorrhage followed. This resulted in patient passing into a state of collapse and unconsciousness. Whiskey and ergot were injected hypodermatically, vinegar cloths were put into uterus, and patient slowly revived. On the third day puerperal mania set in, followed by septicemia, but the patient eventually recovered. (3) Labor natural, hemorrhages, and on examination polypus was found, but its removal was found to be impossible. Later on patient had a very hard bearing-down expulsive pain and the polypus was discharged into the vagina. (4) Patient had a very easy labor, followed by profuse hemorrhage. On examination polypus was found and the placenta retained. The hand of the operator was passed into the uterus and the tumor and placenta were delivered without any difficulty.

9. Dr. Fergusson, of Kings College: (1) Polypus was mis-

[1] Ibid., 1875.

[2] Transactions of Illinois State Medical Society, 1881.

taken for the child's head and forceps applied, and tumor was drawn down and delivered. Child was extracted dead. Patient succumbed to peritonitis. (2) Felt a small tumor, which at first was thought to be the scrotum of the unborn child, but later it was made out to be a polypus. Child was born alive. Frightful hemorrhage followed delivery of placenta and the patient was rescued with great difficulty. Patient afterward would not allow tumor to be removed.

11. Dr. Ramsbotham: Patient 30 years old. Labor was normal. Three weeks after labor patient had slight irregular hemorrhages. Dr. Ramsbotham was called in consultation by Dr. Morn, of Tottenham. Upon examination uterus was found as large as a six-months pregnant uterus, tender, os soft, and Dr. Ramsbotham could just get a finger in and thought that there was a large coagulum or a secondary fetus. Ergot was given. Following day the nurse found something protruding from the os. Dr. Morn introduced his hand and grasped the mass, attached by something like the funis to the fundus. He embraced the stem firmly, and under strong uterine contractions his hand and the tumor, size of a large ostrich egg, were expelled together. Patient recovered.

12. Crisp: Attended a lady aged 36, with her sixth child. Had had three miscarriages. During the last month or six weeks of her present pregnancy she had been subject to frequent small discharges of blood from the uterus. Birth of child was normal. Placenta was retained, and, after waiting nearly an hour, he introduced his hand and removed it. In withdrawing his hand he thought he felt another child enclosed within its membranes, and endeavored to pull away from the side of the uterus what he thought was the placenta, but failed, and then desisted from further interference. Drs. Clowne and Mr. Bristowe, being called to case, discovered that there was a large polypoid growth within the womb, causing violent expulsive pains which greatly exhausted the patient. This energetic action of the uterus forced the polypus so low down in the vagina as to interfere with the passage of the catheter. Patient died of collapse, worn out with constant uterine action, though it was unattended with hemorrhage.

13. M. Guyot relates a case seen five hours after delivery; removed the polypus without any history of loss of blood. Patient recovered.

14. Churchill: (1) Case where labor was natural. In a short

time after delivery flooding came on, resisting all treatment, and patient died in ten hours. A polypus was found. (2) Flooding came on ten days after labor. Uterus was larger than natural and a polypus could be felt. Hemorrhage arrested; but when Dr. Churchill would have tied the polypus it was beyond reach, though the end could be felt. There was no further bleeding and the patient did well.

15. Dr. Radford: (1) Natural labor. A fortnight after, a profuse hemorrhage frequently came on in gushes, with paroxysms of violent pain and bearing-down sensations. No benefit from treatment given and patient succumbed. On post-mortem a polypus within the uterus was found. (2) Natural labor, but hemorrhages the following day. Upon examination a small polypus was found within the os. It was removed and patient recovered.

16. J. C. Reeve:[1] Multipara. Labor normal. One week after delivery a parade of militia, passing in front of patient's house, fired a volley which frightened her, and she was immediately taken with severe pains and flooding. On examination os uteri was found to be patulous and a ragged mass was found in uterine cavity, much firmer than placental tissue. A part was detached, and upon further exploration of uterus a pedicle was found attached to mass. This polypoid tumor was removed and patient made an uninterrupted recovery.

17. Magnus A. Tate: (1) Patient aged 20, in my service at the Ohio Maternity Hospital. First and second stages of labor normal. Child lived ten days. Placenta could not be born even after repeated efforts with Credé method, and, as there was little or no hemorrhage, patient was allowed to rest. In two hours the nurse called interne's attention to a slight hemorrhage. I was immediately summoned and found patient had had another flooding spell (much more severe than the first) just before my arrival. The placenta was still in the uterine cavity, and as two hemorrhages had occurred, the last one quite severe, the time for temporizing had passed, and so I proceeded to deliver placenta. Patient was prepared for operation, and as the anesthetic was being given bleeding commenced, and almost simultaneously and following this bleeding a terrific gush of blood poured out from the uterine cavity. As I began to introduce my hand the anesthetist told me that patient was dead and ceased the chloroform, but this proved to be a false alarm. I proceeded

[1] American Journal of Obstetrics, 1884.

with the operation, but did not administer any more chloroform. Partly blocking the os was a hard, round mass which felt at that time like a premature fetal head, and at its side was an enormous clot of blood. Cleaning out the blood clot, I was able to introduce fingers and then hand into the uterus, and then I found out that I was dealing with a polypus half the size of a fetal head, and at its base was the placenta encircling it. By this time patient began to rally, and as she did so another violent hemorrhage took place, so I forced my whole hand into the uterus, grasped polypus and placenta, and delivered by twisting the whole mass. Patient gave one scream that she was dying and passed into a deep faint. Polypus and placenta were delivered, but nearly at the cost of the woman's life. Hemorrhage at this time was so frightful that it was almost indescribable, but at last the uterus was packed with plain gauze, patient given hypodermatics of strychnia and whiskey, salt solution injected, head lowered, feet elevated, and heat applied externally. Pulse was imperceptible, but heart could be felt to beat in an irregular and feeble manner. Outlook was anything but encouraging, but she slowly rallied, and in three hours pulse could be felt at the wrist. For two days patient slowly but steadily improved, and on the third morning I attempted to remove the gauze packing. As I did so another hemorrhage took place, so I ceased, and it was not until the tenth day that I could remove all of the gauze. The temperature and pulse steadily increased from the third to the seventh day, when the temperature was 105° and pulse 140. For the next six weeks temperature ranged from 103° to 105° and pulse 120 to 150, and patient had a very offensive discharge from the uterus. Temperature and pulse began to decline the seventh week, and at the end of twelfth week patient left the hospital, temperature and pulse normal, but she was very weak and emaciated. Three weeks after leaving hospital I was summoned to her house and found patient with a temperature of 105° and a pulse of 140. Diagnosis was now malaria, which was confirmed by Dr. B. K. Rachford, who saw case with me. This illness lasted four weeks, but recovery at last followed.

18. Magnus A. Tate: (2) Patient, aged 29, had been pregnant twice, had had two miscarriages, and was now pregnant for the third time. First miscarriage two years ago, in which no difficulty was encountered, but during the second one, some ten months afterward, there was quite a loss of blood and a retained placenta, which was extracted, and this was followed by a long

spell of fever. At this, the third miscarriage, child was about six and a half months old and the placenta could not be expelled. Dr. Dunlap, who was in charge of the case, made repeated attempts at delivery, but was unsuccessful, and, as there were no untoward symptoms, the placenta was allowed to remain in the uterus with the hope that nature would accomplish what external manipulation could not do, namely, expel the placenta. For ten days the placenta remained within the uterus and no symptoms developed; woman seemingly apparently well. On the morning of the eleventh day pulse was 100 and temperature 100°, and then I saw patient for the first time. I, like Dr. Dunlap, tried external means to deliver, but could not do so, and, after preparation, I operated. Chloroform was administered. Os would not allow more than the introduction of one finger at first, but by perseverance I was able to insert three fingers into the uterus. Finger tip came in contact with a hard mass the size of an orange, and back and partly around it I felt the placenta. Finding that I would be unable to deliver with fingers, I inserted placental forceps and delivered polypus and placenta piecemeal. Having removed all of the mass that I could feel, and as the hemorrhage was quite profuse, I hurriedly packed uterine cavity with plain gauze. The second day after delivery, and the thirteenth day after beginning of miscarriage, temperature was 102° and pulse 110, following day each 100, and from that time on pulse ranged from 90 to 70, temperature 99½° to normal. Three weeks after that both were normal. During these three weeks patient had a discharge composed of a mixture of blood, pus, masses of placental tissue, and portions of polypus, which was so offensive that it polluted the bedding and carpet so that both had to be burned after patient's recovery. Such an offensive discharge I never smelled, and with such a condition (barring the odor) patient was comparatively comfortable and temperature and pulse good, the former never above 102° nor the latter more than 110. Under treatment discharge gradually decreased and odor lessened, and in one month patient was able to do light housework.

Analyzing the above 41 cases, the histories of which, as a whole, are not complete, I note the following: In 9 cases only the names of reporters are given, without any mention of history of case. In 6 cases the tumor became gangrenous. Hemorrhage was the prominent symptom, it occurring in 18 cases. Three polyps were expelled spontaneously. Seventeen polyps were

removed. In 10 cases the labor was normal. In 4 cases labor was difficult; in 2 the child had to be destroyed, one was a case of turning, and the other a breech. In 3 cases the polyp was not removed. In 4 cases the tumor was discovered before, in all of the rest after, labor. Four cases reported where labor set in before time; 2 were at the fifth and 2 at the seventh month.

Following are complications reported: septicemia, 8; measles, 1; puerperal mania, 1; retained placenta, 4 cases. Treatments mentioned: cold applications, ergot, iodides, whiskey, vinegar cloths in uterus, packing of uterus with gauze, and removal of tumor. Causes of death: sepsis, 3; hemorrhage, 3; peritonitis, 1; and collapse, 1, making in all 8 cases. If all of the other cases, including the 9 without histories, recovered, we have 33 recoveries and 8 deaths, a mortality of 19½ per cent.

DISCUSSION.

DR. L. H. DUNNING, of Indianapolis.—Permit me to ask the essayist a question. Did I understand him to say that all of the cases reported were those in which the placenta was retained?

DR. TATE.—No, sir.

DR. DUNNING (resuming).—If the essayist desires it, I shall be glad to send him a carefully prepared report of a case that came under my observation. I will say that it was a case in the practice of Dr. Henry Jameson, of Indianapolis, and occurred seven or eight years ago. The patient fell to my care by accident. The woman had been delivered of a child four days before I saw her. There was no suspicion of any trouble, convalescence being normal, until suddenly one afternoon she was seized with a violent hemorrhage. Dr. Jameson was out of town at the time and I was called to see the woman. On reaching her bedside, supposing the placenta had been retained, I made a digital examination (the os was very patulous), carried my fingers into the uterus easily, and to my surprise found a submucous fibroid tumor as large as an orange, with a long pedicle, attached near the fundus of the uterus. Fortunately, I had in my instrument case a long curved forceps. It was sterilized and introduced into the uterus. With it the pedicle was seized and twisted off, after which the uterus was washed out. The patient made an excellent recovery.

I saw another case, one which was sent to me by a former president of the American Medical Association, Dr. Hibberd, of Richmond, Indiana, for the removal of quite a large polypus which was attached to the cervix near the internal os. I had

no difficulty in removing it by torsion. We knew the woman was pregnant; she miscarried immediately afterward, that is, the following evening. The polypus was expelled from the uterine cavity after pregnancy occurred.

DR. J. HENRY CARSTENS, of Detroit.—A case of multiple fibroids of the uterus in which the placenta could not be removed came under my observation about a year ago. But such cases are rare. Strenuous efforts to remove the placenta had been made by physicians who were called while the woman was completely under the influence of chloroform, but failure resulted. I was called and performed abdominal hysterectomy. I have a full report of the case, with illustrations, etc., but have not written it up for publication. I have been unable to find any cases reported where an abdominal hysterectomy has been done for the purpose of removing a retained placenta.

DR. JAMES F. BALDWIN, of Columbus.—I would like to ask Dr. Tate if he includes simply submucous fibroids of the uterus, or only polypi with distinct pedicles?

DR. TATE.—I include every one of them.

DR. BALDWIN (resuming).—I can report three cases, one of them similar to one of the essayist's. In the first the woman had repeatedly miscarried, having a distinct submucous fibroid. She would not consent to its removal, apparently regarding it as a godsend to have something of the kind. She finally went to term and the fibroid disappeared.

The second was that of a young woman who miscarried at six months. Twenty-four hours later, all attempts at delivery of the afterbirth having failed and hemorrhage continuing, I was called. There was a large fibroid in the anterior abdominal wall, with the uterine cavity above it and inaccessible. I therefore made an abdominal hysterectomy, which resulted in recovery of the patient.

In the third case, in addition to a submucous fibroid, there were a number of others. I was called to see the woman at half-past 5 in the afternoon. She had been delivered about two hours before of a dead child. She also had been delivered a year before with forceps. Collapse coming on with hemorrhage, the attending physician telephoned me that there was something wrong. I found her almost pulseless. There had been a great deal of hemorrhage. Examination showed a mass of uterine fibroids with loops of intestine in the vagina. The woman was at once sent to the hospital, reaching there in thirty minutes, yet was practically moribund when she arrived. Her pupils were dilated and she was unconscious. After being put in the Trendelenburg position, her pupils contracted and her breathing improved. I opened a vein in the elbow and introduced normal salt solution. On opening the abdomen the pelvis was found entirely empty. On introducing the hand the uterus was found resting against the liver. I poured in a pitcher of hot normal salt solution, and then pulled the uterine mass out. It

was attached to the pelvic structures by only the upper border of one broad ligament. One ovary and tube were torn off but still attached to the pelvis. I ligated the little pedicle that remained, removed the ovary and tube on the opposite side, fixed up the floor of the pelvis, put in gauze drainage, cleaned out the blood clots, poured in another pitcher of hot salt solution (in the meantime about three quarts of normal salt solution had passed into the veins), and hurried her to bed, but she died in a very few minutes thereafter.

Examination of the uterus revealed a submucous fibroid, about the size of a fist, just above the internal os, with half a dozen larger fibroids, making quite a large mass. Just how this complete detachment had occurred I do not know. Forceps had been used, but I was assured that no attempt at turning had been made.

DR. WALTER P. MANTON, of Detroit.—This paper emphasizes a point made by the President in his address this afternoon—namely, that obstetrics and gynecology are inseparably united. When I graduated in medicine I did not intend to do obstetric work at all, but I soon came to the conclusion that in order to be a good gynecologist one must know a great deal about obstetrics, and I am sure that the three years which I spent in the larger hospitals and maternities abroad in studying obstetrics, and the thousands of midwifery cases with which I had to do at that time, have helped me in my work. I have delivered a good many women who have had fibroids in different parts of the uterus, and I would summarize my experience in this way: subserous fibroids, unless they are very large in size, rarely, if ever, complicate pregnancy. I do not recall ever having seen a case of interstitial, mural, or submucous fibroid of any considerable size where pregnancy has gone on to term. I have seen but one case in which a large cervical mural fibroid prevented delivery, and enucleation of the fibroid had to be done before the woman could be delivered.

Such papers as the essayist has read this afternoon are valuable, and teach that if one is to be a good obstetrician he certainly must have a good knowledge of pelvic and abdominal surgery, and I believe the converse is also true.

DR. C. L. BONIFIELD, of Cincinnati.—I wish to report two cases of pregnancy complicated by fibroid tumors of the uterus. The first I saw within a year after I graduated, in consultation with Dr. ———, of Norwood, Ohio. He believed he was dealing with an inversion of the uterus occurring twenty-four hours after labor, and when I first examined the patient I confirmed his diagnosis. With the patient anesthetized I could carry my hand into the vagina and recognize the cervix, and make out that it was a polyp I had to deal with, which I immediately removed. The pedicle was twisted and cut off.

The other case I saw was in Washington, Indiana. The patient had been pregnant about six months. She was the wife of a

physician. She had miscarried and there had been a retained placenta. I was summoned to see her without being told what the condition was. When I arrived I found her in a very bad state, with temperature of 105°, pulse scarcely countable at the wrist. I was hardly prepared to do the work necessary. I tried to remove an infected submucous fibroid as large as a cocoanut, and succeeded in doing so just as the patient expired.

DR. L. S. MCMURTRY, of Louisville.—I would like to ask Dr. Tate, in closing the discussion, to state whether or not, as the result of his studies of the subject, he does not think that in cases of retained placenta and sessile intrauterine fibroid tumors, such as he described in one of his cases, it would be good practice to do abdominal hysterectomy.

DR. W. D. PORTER, of Cincinnati.—As I have had no experience in this unusual condition, I hardly feel like discussing the general principles involved. I have never seen a case of submucous fibroid complicating pregnancy in which pregnancy has gone to term. I saw a case once in consultation, in which there was a polypus as large as a fetal head in the vagina. Two weeks before, an abortion at the end of the third month had occurred. Inversion of the uterus was suspected, but a little investigation showed that it was a sloughing mass, and it required very little force to remove it.

DR. EDWARD T. ABRAMS, of Dollar Bay, Michigan.—I did not expect to be called upon to discuss this excellent paper, as I have had very little experience with fibroid tumors or polyps complicating pregnancy. However, I can report one case that I saw about six months ago of a uterine fibroid which complicated pregnancy. My assistant went to the case and delivered the woman. There was a profuse hemorrhage immediately afterward. I was sent for at once, and when I arrived I discovered a uterine fibroid. I had considerable difficulty in delivering the placenta and the tumor, which was a polypus. However, the woman made a good recovery, though she was very weak at the time.

DR. MONTGOMERY LINVILLE, of Newcastle, Pa.—I have encountered but one case of intrauterine fibroid complicating pregnancy, and this occurred about two years ago. The patient aborted at four months, and was attended by a colleague, who did not succeed in removing the afterbirth for twenty-four hours. Much to his surprise, he noticed the uterus was so large that it extended to the umbilicus. It seemed very high. The patient had severe pains, which continued off and on for a week or ten days, so that it became necessary to give anodynes to relieve her. She had profuse hemorrhages at intervals during five or six days. Finally, I was called in consultation. In the meantime she had been having chills and high temperature. When I saw her her temperature was 107°, pulse 150. Her condition was such that a suprapubic hysterectomy seemed impossible, as I did not think she would bear an anesthetic. I excised the vaginal por-

tion of the womb and found that a fibroid occupied the upper two-thirds of the uterus. Fortunately, I succeeded in removing it by morcellation, although it was exceedingly difficult to do so and required a considerable length of time. When removed it was about the size of a placenta at term. The patient began to improve immediately after the operation, and made a speedy recovery therefrom. At the end of two weeks I closed the wounds in the cervix, and in three weeks more her recovery was complete.

DR. TATE (closing the discussion).—It is always a pleasure to have one's paper received and discussed as freely as the one I have presented. There is one thing I am a little surprised at—namely, that these tumors complicating pregnancy are not as rare as one would suppose. Dr. Halliday Croom in 1885 was able to collect from the literature 21 cases. Since then, which is the work of three months, I have been able to collect 20 more. It is surprising how cases of such a character with profuse hemorrhage can rally and recover. Another thing which surprised me when looking up the literature was that these patients could go to term with these tumors within the uterine cavity.

With reference to the question of Dr. McMurtry: if I should encounter a patient in good condition, who had not lost too much blood, I would not hesitate to do abdominal hysterectomy. But there is the feature of hemorrhage in the case, and I do not know whether it would be wise always to do abdominal hysterectomy.

CELIOTOMY DURING PREGNANCY.

By J. H. CARSTENS, M.D.,
DETROIT.

When formerly a surgeon made a mistake in his diagnosis on opening the abdomen and found pregnancy, he quickly closed it and let the case alone, even if some growth or pathological condition existed. He had a great dread of interfering. With the improvements in abdominal surgery more courage was shown. Some cases required prompt operation, pregnant or not, and it was soon found that operations could be performed just as safely during pregnancy as they could if it did not exist. Tumors that would interfere with normal delivery were removed and other acute conditions, such as appendicitis or injury to the bowels, were promptly operated upon, even if it were known that pregnancy existed.

In many cases operations were performed when it was not known that pregnancy existed. In fact, in some cases it is utterly impossible to diagnosticate this physiological condition when it is complicated by growths or inflammatory products. Of course every experienced surgeon makes mistakes occasionally, while the inexperienced one makes them quite often. Especially in those growths accompanied by hemorrhage it is in some cases utterly impossible to make a diagnosis. Some of the symptoms of pregnancy may be present and still those same symptoms will be produced by tumors. The disturbances of the stomach, the enlargement of the breasts, and the increased size of the abdomen are present both in pregnancy and in various neoplasms. Still to-day, with a more thorough knowledge, we can generally diagnosticate pregnancy if accompanied with a morbid condition, and we operate deliberately with a full knowledge of what we have to deal with and thus can be on our guard. Our greatest pride is not to operate on a case because it is pregnant.

It is to do some severe complicated operation and still *not interfere with pregnancy.* That seems to me to be the greatest aim of the ambitious abdominal surgeon.

Having had cases requiring various kinds of surgery, it will be interesting to report them, and I have, of course, not included in this list cases of Cesarean section or extrauterine pregnancy.

Appendicitis and Pregnancy.—The fatal results from neglected cases of appendicitis are so well recognized now that prompt surgical interference is the only correct view, pregnant or not. I have had a number of this kind of cases, as follows:

CASE I.—Mrs. H. B., aged 28, three months pregnant; acute appendicitis; ruptured and suppuration. She was brought from one of the interior towns on a stretcher. I operated December 10, 1892, opening the abscess, removing the appendix, and putting in a drainage tube. The septic process, however, continued and she died the third day.

CASE II.—Mrs. P., aged 30; had symptoms of obstruction of the bowels with inflammation of the appendix; operated on her at Harper Hospital April 10, 1894, she being pregnant at the time five months. On account of the extensive adhesions the operation was difficult. She recovered from the shock of the operation, but was immediately taken with labor pains and aborted twenty-four hours after the operation; gradually sinking, she died twelve hours later of shock.

CASE III.—Mrs. F. T., aged 23; pregnant four months; three attacks of appendicitis of mild type; a patient of Dr. Garvin's; operated November 3, 1898; during the time had an acute attack of a mild type; recovery and, as I learn, delivery at term.

CASE IV.—Mrs. G. F., aged 31; pregnant six months; acute attack and suppuration; operated December 24, 1901; drainage; aborted third day; suppuration and fecal fistula continued for six weeks; complete recovery.

CASE V.—Mrs. F. T., aged 23; pregnant five months; had two attacks. Being a trained nurse, she knew all about the seriousness of appendicular troubles and was only too willing for an operation. I performed the operation August 3, 1901, forty-eight hours after the onset of the third attack. The appendix had not ruptured and I could make an ideal operation, closing the abdomen without drainage. Complete recovery and delivery at term.

Fibroids; Myomectomies.—Fibroids often interfere with de-

livery, especially if in the cervix or near there. Large fibroids in the body of the uterus which project into the peritoneal cavity, as a rule, offer no obstruction to labor, but frequently prevent contraction and thus are the cause of postpartum hemorrhage, and in that way become dangerous and therefore cause much anxiety to the obstetrician. Of fibroids operated upon during pregnancy I have three cases, as follows:

CASE I.—Mrs. F. H., married one year; diagnosis, pregnancy of three months' standing and a hard tumor, either of a long-pedicled fibroid, fibroid of the ovary, or a dermoid. As it seemed to grow rapidly, I advised an operation, which I performed July 31, 1894. On opening the abdomen it proved to be a long-pedicled fibroid, and by making a wedge-shaped incision into the pedicle near the uterus I could easily bring the edges together, slightly inverting the peritoneum and closing the abdominal incision, using kangaroo tendon throughout. She made a splendid recovery. Being a highly-educated lady, she remembered my request to let me know the final outcome of the case, and a year later sent me a picture of her baby, then 6 months old.

CASE II.—Mrs. Dr. P., aged 27; pregnant five months. She was very anxious to have a child, having been married seven years, but did not seem all right. The doctor on examination found that there was something wrong and brought her to me. On examination I found that she was pregnant about five months and had a number of fibroids—one, between the uterus and the bladder, about the size of a pigeon's egg. This seemed to have grown very rapidly, and if it continued to do so would certainly interfere with delivery, so I advised a celiotomy and enucleation of the fibroid. The operation was performed March 18, 1897. Besides I found two smaller ones at the anterior part of the uterus, which I also removed. The whole uterus seemed to be studded with fibroids from the size of a millet seed to a pea. I could not and did not try to remove them, but closed the abdomen, using kangaroo tendon throughout. A slight abscess developed in the incision, but it closed in the course of three weeks. She made an uninterrupted recovery. I entirely lost track of her, but understood that she had premature delivery at seven months.

CASE III.—Miss C. H., aged 25; had a hard tumor, but had no menstruation for over four months. I was very suspicious of

pregnancy, although I was not positive, as we all know that such cases are very deceiving. Hence I made an operation and found a fibroid five inches by two, which I could enucleate without much trouble. She was pregnant about four months. She made an uninterrupted recovery. Her mother was with her, but never found out the real trouble. I, however, told the girl her condition, that she ought to attend to it immediately and get married. As she came from Virginia and went back there, I never heard the end of the case. I operated July 28, 1898.

CASE IV.—Mrs. G. K., aged 34; pregnant five months; had three fibroids, one in the broad ligament about two and one-half inches in diameter, the other being about one and one-half inches; the latter being posteriorly, growing into the cul-de-sac, would have caused obstruction to labor. I operated on her January 5, 1899, enucleating the fibroid and closing the wounds, using catgut; closed the abdomen also in the usual manner with catgut. She had a good deal of pain afterward, which was controlled by morphine, but on the third day the pain became worse; she finally was going to abort. During the night hemorrhage set in and the fetus was delivered without the knowledge of the nurse or anybody else, the patient not complaining at all; the hemorrhage being evidently profuse, because when notice was taken of her she was in collapse. Although the most energetic means were immediately taken to revive her, she gradually became weaker and died the fourth day. Her temperature being normal, no doubt the cause of death was simply hemorrhage.

Hernia.—Of hernia I had only one case, that of Mrs. S., aged 28; three children; pregnant six months. She had inguinal hernia for years and had suffered a great deal from nausea during this pregnancy. All at once this became uncontrollable, and after vomiting for twenty-four hours she sent for her physician and he attributed her vomiting to the pregnancy. But after another twenty-four hours, as it did not cease, he became suspicious and finally decided that the hernia must have something to do with it. I was called in and verified the diagnosis, but the patient absolutely insisted that the hernia had existed for a long time; she had no pain then and it had nothing to do with her condition. However, I gave her until the next morning and then insisted on an operation. She agreed to go to the hospital, where I operated on her November 11, 1898. There was an old omental hernia with adhesions, which makes these

cases so deceptive (we all have had them), and on top of this there was a small knuckle of intestine strangulated. She made an uninterrupted recovery and was delivered at term.

Abdominal Hysterectomy.—CASE I.—Mrs. W., aged 41, mother of three children; irregular and profuse menstruation for one year; during last three months more or less bleeding constantly; uterus large, somewhat soft; diagnosis, soft fibroid. Operation June 10, 1893; total abdominal hysterectomy; great

Abdominal hysterectomy—Case I.

tendency to bleeding. Abdomen closed with kangaroo tendon. Sepsis and death third day. What was my astonishment, when I examined the specimen after the operation, to find a pregnant uterus with the soft fibroid. With every case of myoma I now always expect pregnancy, but have found no case since.

Ovariotomy.—At the meeting of this association in 1889, I reported a case of fibroid of the ovary.

CASE I.—Mrs. L., aged 26; four years married; no children; pregnant three months; hard tumor in right ovary removed; uninterrupted recovery. Silk was used throughout. Delivery at term.

CASE II.—May 10, 1890, I operated on Mrs. H. L., aged 30, at the Woman's Hospital. I made a diagnosis of pregnancy at three and one-half months; large ovarian tumor, weighing about twenty pounds, was removed in the usual way. She made a complete recovery and was delivered at term. Silk was used as ligature.

CASE III.—Mrs. C. W., aged 34, mother of three children; five months pregnant and a hard tumor in the cul-de-sac. As it would interfere with confinement, I urged an operation. On April 26, 1892, I removed a dermoid tumor, about four inches in diameter, which was adherent in the cul-de-sac. She made an uninterrupted recovery and was delivered at term.

Vaginal Hysterectomy.—During the meeting of the American Medical Association in Detroit, 1892, I performed a number of operations, one being:

CASE I.—Mrs. H. B., aged 29. She had more or less menstruation trouble; for ten weeks had flowed steadily; the uterus was large, the cervix ulcerated, and there was no question about it being cancer. I performed vaginal hysterectomy with the clamps June 10, 1892. There was great tendency to hemorrhage, but I finally removed it, and on opening the specimen I was astonished to find a small fetus about ten weeks. She made an uninterrupted recovery, but in nine months the cancer recurred and three months later she died (see illustration).

CASE II.—Mrs. G. H. B., aged 28; one child five years old. Her mother had died of cancer of the uterus at the age of 29 and she had a great dread of the disease. She became pregnant, and, having considerable pain and a great deal of discharge, she was sure that cancer was developing. Dr. Wilson, whose patient she was, was suspicious from the general appearance of the case. I was called in, and I stated that it was very suspicious of cancer; but as I could not curette her on account of pregnancy, I could not verify my opinion by microscopic examination, so inclined to let the case alone. However, she continued to get worse, and I decided to perform a vaginal hysterectomy, which I did on December 15, 1900. The operation was easy, but the woman

started to vomit. Septic peritonitis set in and she died on the sixth day. Careful examination failed to reveal any cancerous condition, although the macroscopic appearance was decidedly so.

CASE III.—Last year I read a paper before the Mississippi Valley Medical Society; reported a case of pregnancy four and one-half months with cancer in a woman 26 years old. The operation was performed March 13, 1901. Recovery and no recurrence a year later. Published in full in the *Journal of the American Medical Association.*

Miscellaneous; Phantom Tumor, etc.—CASE I.—Mrs. F. D., aged 30. After hoping for a long time, she became pregnant, but she increased so rapidly in size that at five months the abdomen was so extensive that she could breathe only with the greatest difficulty. The case was very obscure and it was impossible to make a diagnosis. Her family physician thought it was an ovarian tumor, but I could not decide what it was, but agreed to make an exploratory celiotomy, as something had to be done. She was prepared and I operated April 10, 1894. Thinking that she was fully under the influence of chloroform, I began to make an incision and found that she was not fully under the influence of it. I continued, however, to open the abdomen while more chloroform was being administered. Just when I had the abdomen opened everything collapsed. The abdomen contained nothing, simply a pregnant uterus. It was a case of phantom tumor. I closed the incision with kangaroo tendon. She made an uninterrupted recovery. The phantom was gone and she was delivered August 8 of a living child and has been one of the most grateful patients I ever saw.

CASE II.—Mrs. J. D., aged 42; had one child nineteen years ago. Had menstruation for one year. Had been seen by a number of physicians, as she was getting very large, and a diagnosis of ovarian tumor was made; but on examination I found that in the anterior part of the uterus, between it and the bladder, a small fibroid tumor was situated. The cervix seemed to be large, but could hardly be reached by the finger. The fluctuation was very distinct. I had some doubt of her condition; thought that it probably was a fibrocystic tumor of the uterus. The question of pregnancy never entered my mind, as she had no menstruation for a year, and her family physician and others all suggested it to be an ovarian tumor. I operated October 27, 1898, and found that she was pregnant about eight months. In

the uterine walls there were a number of small fibroid tumors. I immediately closed the incision with catgut, but a premature delivery took place five days later of a living child. She made an uninterrupted recovery.

CASE III.—Mrs. W. A., aged 28, was four months pregnant. She fell from a street car and was brought home suffering from shock. She seemed to revive, but the next day was in pain and suffering from great shock. She was then brought to the hospital. The temperature was normal, but the pulse gradually increased to 150 and 160. Examination revealed a tumor in the cul-de-sac. I made a diagnosis of ruptured extrauterine pregnancy and immediately proceeded to operate. Getting down to the peritoneum, I was astonished not to see it black, and on opening there was no blood in the abdomen at all, but the uterus was retroflexed and somewhat adherent from beginning pelvic inflammation. I broke up the adhesions and lifted the uterus up to a normal position. I closed the incision with sterile catgut July 21, 1900. She made an uninterrupted recovery and was delivered five months later by Dr. Bell.

CASE IV.—This case shows how easily you can be fooled if you are not constantly on your guard. A physician brought a young lady to me a few years ago with the following history: she had irregular menstruation and a number of attacks of pelvic inflammation, especially on the right side. The last attack was about two or three months previous, when she was confined to her bed for three weeks, and had been ailing more or less ever since and was suffering a good deal of pain on the right side. From the symptoms and examination I diagnosticated adhesions, with exudate in the right side and probably involvement of the appendix. I suggested an exploratory celiotomy, loosening the adhesions and doing whatever I found necessary. As the young doctor was engaged to the young lady, a question of pregnancy never entered my mind. When I opened the abdomen, however, I immediately recognized pregnancy with adhesions on the right side. (There was no involvement of the appendix.) These were easily broken up, aristol applied, and the abdomen quickly closed. She fortunately made an uninterrupted recovery. I was in great trouble indeed for subjecting the lady to such a dangerous operation, where the result might be serious. All the symptoms had been magnified to me, but I am sure perfectly unintentionally, as both the parties never suspected what

the trouble was. However, she made a splendid recovery, but two months later aborted, it is claimed as the result of violent exercise.

Therefore I have had:

Appendicitis	5 cases.
Fibroids	4 "
Hernia	1 case.
Abdominal hysterectomy	1 "
Ovariotomy	3 cases.
Vaginal hysterectomy	3 "
Miscellaneous	4 "

—or altogether 21 cases and 5 deaths, so that the mortality is over twenty-three per cent. This includes all my cases for many years. I think that to-day the mortality would be far less.

In conclusion I would say that all acute diseases requiring prompt operation can be operated upon just as well as if no pregnancy existed. Tumors that would interfere with labor should in all cases be operated upon, as there is far less danger in removing them during pregnancy than there is by non-interference and letting the woman go to term. I have seen many most lamentable cases of the latter kind. Tumors above the brim of the pelvis, or which can be shoved above the brim of the pelvis, need not be interfered with; still, as a rule, all tumors take on a very rapid growth during pregnancy, and the increase in size may interfere with the various functions of life and then require surgical intervention.

DISCUSSION.

Dr. Edwin Ricketts, of Cincinnati.—This paper of Dr. Carstens is so in keeping with the man that I cannot refrain from making a few remarks, particularly when he begins by reporting five cases of appendicitis complicating pregnancy. I have a paper which I have prepared to read before the Virginia Medical Society next week, the title of which is "Puerperal Appendicitis." While I do not wish to anticipate that paper, there are certain points that can be considered at this time.

It has been my experience to meet with a number of cases of appendicitis complicating the puerperal state, and on my way to this meeting I did three operations for appendicitis in

West Virginia. One of them was upon a woman 27 years of age, married, who gave a history of her first attack of appendicitis following an abortion. The statement has been made that appendicitis does not occur as frequently in the female as in the male. If we are able to differentiate the puerperal conditions that we find, and recognize the difference between them and appendicitis, I am sure it will result in a change in the professional mind with reference to the belief that appendicitis does not occur as frequently in the female as in the male.

One case which furnished food for thought was that of a pregnancy of four months in which the family physician made a differential diagnosis. When I was called in consultation I disagreed with him and said there was obstruction of the bowel. There was partial obstruction of the bowel and vomiting. The abdomen was opened, appendicitis was found, and the bowel attached and turned on itself. I was not so fortunate in that case as to the fetus, which was delivered dead within twenty-four hours after the operation.

I have had some experience with reference to fibroid tumors of the uterus complicating pregnancy. Some eight years ago a patient consulted me from another state. She was pregnant and had a fibroid tumor in the left fornix. I succeeded in delivering this patient at term, yet the hemorrhage was profuse, and with great difficulty we were enabled to save her life. Unfortunately, pregnancy has not taken place since that time.

Speaking of puerperal cases complicated by appendicitis, I had recently to go across the river from Cincinnati, to see a woman in whom appendicitis came on during the last three months of her pregnancy. The physician in attendance made a diagnosis that the right ovary was involved. After a careful examination appendicitis was diagnosticated, the abdomen was opened, and the appendix removed. There were no adhesions. The form of appendicitis was undoubtedly catarrhal, and the appendix was filled with concretions.

DR. WILLIAM J. GILLETTE, of Toledo.—I was very much interested in Dr. Carstens's paper. About three months ago I was called to see a woman who was about five months advanced in pregnancy, her condition being complicated by a large interstitial fibroid tumor. The fibroid was about the size of a cocoanut, and impacted in the pelvis. I suggested hysterectomy. On opening the abdomen, with a good deal of difficulty I found I could get it out above the pelvic brim. An important point that has interested me is, could I have enucleated a tumor the size of this from a pregnant uterus without producing a miscarriage? In a single case in which Dr. Carstens removed the tumor I believe the pedicle was small. The tumor was not interstitial, yet the patient recovered, and the child happily was delivered. Is it possible (I would like to have Dr. Carstens answer this question) to remove a fibroid tumor as large as a

cocoanut from the wall of the uterus and have pregnancy go on to term?

Dr. Miles F. Porter, of Fort Wayne.—In the *Annals of Gynecology and Pediatry*, I think—although I am not quite sure about this—in connection with a paper which I had the honor to present before the Western Surgical and Gynecological Association, I reported a case which answers the question asked by Dr. Gillette. That case also negatives the statement made by Dr. Carstens, namely, that the size of the tumor itself does not call for operation in cases of pregnancy. In the first place, this operation was done and the tumor removed for the express purpose of allowing the woman, who was 30 years of age, to carry her child to term. The tumor was quite a large one. It was attached to the right side of the fundus. She was four months pregnant. (Dr. Porter demonstrated on the blackboard the method adopted by him in removing the tumor.) The woman is nursing her child, which is about three months of age. This case illustrates two points: first, that a large wound may be made in the uterus without seriously interfering with pregnancy; second, one of the indications for operation not often seen, but which will present itself in these cases, is that which arises from the necessity of removing from the abdomen a large tumor, because of the impossibility of the abdomen to retain both a large growth and a pregnant uterus at term. My own impression has been, after operating on six or eight cases of different kinds during pregnancy, the same as that of Dr. Carstens, namely, other things being equal, the presence or absence of pregnancy has no weight, either for or against operation.

Dr. L. S. McMurtry, of Louisville.—While the case reported by Dr. Porter demonstrates the skill with which the operation was done and its propriety, yet I think it would be unfair for us to take that single case as a universal justification for operative intervention in fibroid tumors complicated by pregnancy, the same as in the treatment of fibroid tumors of the uterus that are not complicated by pregnancy.

Dr. Carstens stated that in a large proportion of cases of fibroid tumors of the uterus complicating pregnancy, the woman would go on through labor without interference from the tumor, unless it was so situated as to mechanically obstruct labor. When we come down to the facts, in the majority of operations done in cases of fibroid tumors complicated by pregnancy, the diagnosis of pregnancy is not made until an operation is done. In a large number of these cases the operator himself thinks he is operating upon a fibroid tumor, with menstrual irregularities produced by the tumor itself, and it certainly would be very unjust for it to go forth from this association that operations upon fibroid tumors complicated by pregnancy should be done with the same aggressive spirit as they are done in cases of fibroid tumors disassociated with pregnancy.

A fibroid tumor of comparatively small and insignificant proportions, when pregnancy occurs, grows *pari passu* with the development of the uterus; and a comparatively insignificant tumor in the unimpregnated uterus becomes a conspicuous one in the pregnant uterus, and creates the impression oftentimes of a larger, rapidly-growing tumor that needs prompt operative intervention. Too much care cannot be exercised in the diagnosis of pregnancy associated with fibroid tumors, in order to guide the surgeon to a judicious course as regards operation. When one of these fibroids in the pregnant uterus becomes so large that it will prevent the uterus from rising out of the pelvic basin into the abdomen, it may require operative intervention; but if the tumor will rise up out of the pelvis and not prove a mechanical obstacle to labor, it is best to let it alone, for just as soon as labor is completed the tumor will decrease in size and become as insignificant as it was before pregnancy. There is no doubt, in a large proportion of cases, that a small fibroid tumor in the process of involution will disappear entirely, so that I think we should qualify our position accordingly.

DR. CARSTENS (closing the discussion).—There is very little for me to add to what has already been said. Dr. McMurtry has emphasized what I have pointed out, and it is simply this, that the question of pregnancy has nothing to do with operation. If an operation is absolutely indicated during pregnancy for appendicitis, gallstones, or any other septic condition, it should be performed. Fibroid tumors that are situated above the brim of the pelvis and do not interfere with labor do not require abdominal section. I thought I emphasized that point in my paper.

DECIDUOMA MALIGNUM—WITH REPORT OF A CASE.

By LEWIS S. McMURTRY, M.D.,
LOUISVILLE.

In 1888, Prof. Sänger reported to the Obstetrical Society of Leipzig two cases of malignant disease of the uterus presenting distinctive pathologic characteristics and which had not been previously recognized. The growth appears upon the mucous lining of the uterine corpus following abortion or ordinary labor, with profuse bleeding, and is succeeded by bloody and offensive discharges. Metastatic deposits in the lungs, vagina, and other organs are very common, and progress to a fatal result is rapid. The cachexia is marked, and the progress of the disease, if uninterfered with, is so rapid that the time from the first symptoms to the death of the patient occupies only a few weeks or months. The diagnosis of the disease is not especially difficult, and the treatment is encompassed by a single decisive surgical procedure —early and complete extirpation of the uterus.

The greatest difficulties centre about the pathogenesis and true pathological classification of the disease. Sänger believed the growth originated from decidua cells, and accordingly gave it the name of deciduoma malignum.[1] Pfeiffer, in 1889, reported a case and proposed the same name.[2] The theory advanced by both Sänger and Pfeiffer attributed the growth to malignant changes in the decidua cells. In his second paper, in 1893, Sänger submitted a review of his case and a study of eleven additional cases reported, and suggested another name, more accurately in accord with his interpretation of the pathology as revealed by more extensive investigation, suggesting "sarcoma uteri deciduo-cellulare."[3] His conception of the pathology was that of sarcoma originating from the products of conception.

Gottschalk reported a case and proposed the name "sarcoma chorio-cellulare," believing the disease to consist in malignant degeneration of the stroma of the chorionic villi.[4]

[1] Centralbl. f. Gyn., 1889.
[2] Präger Wochen., 1890.
[3] Archiv. f. Gyn., 1893.
[4] Ibid., 1894.

In 1895, Marchand first published his studies upon this subject, and in 1898 made additions to his valuable contribution. These important investigations were exhaustive and have done more than any other toward the elucidation of the subject.[1] He demonstrated the epithelial character of the growth and claims that it springs from the two kinds of tissue composing the epithelial covering of the villi. The tumor, in accordance with Marchand's views, arises from the syncytium and Langhans' cells, which undergo malignant degeneration and proliferation. He believes that metastases obtain by way of the blood vessels. Fränkel and Gebhard have confirmed Marchand's observations, and German investigators generally concur that the growth is epithelial in character, growing from the epithelial layers covering the chorionic villi—that is, an epithelioma.

This view has been accepted in America; and, while our English cousins maintained for a time that the disease was sarcoma and not necessarily associated with pregnancy, they, too, have become converted to Marchand's teachings. But with this important pathological basis established, the origin of the syncytium (a structure composed of epithelial cells lying between the decidua and chorionic villi over the layer of Langhans) and Langhans' cell layer (the epithelial covering of the chorionic villi) is not settled; thus Gottschalk and other observers claim that both are derived from the fetal ectoderm, while others believe that the syncytium is derived from the surface epithelium of the uterus. The result of this difference is that it remains unsettled whether the growth we call deciduoma malignum has its origin in fetal or maternal structures, or in both. For clinical purposes, however, this term, originally proposed by Sänger, is quite sufficient to indicate the present state of our knowledge. An interesting feature of the pathology is the frequency with which the disease follows hydatid-mole pregnancy.

The area of active growth is situated superficially upon the uterine mucosa and forms a tumor bulging into the uterine cavity. The macroscopic appearance resembles placental tissue, but microscopic examination shows granular masses and large nucleated cells derived from the syncytium and Langhans' layer, and, beneath this, chorionic villi whose epithelium is in active proliferation.

Clinically the disease presents a distinct history. Hemorrhage is invariably the first and most persistent symptom. Cu-

[1] Monatsch. f. Geb. u. Gyn., 1895.

retage does not control the hemorrhage. The flow is at first red, but later, as the disease reaches an advanced stage, it becomes dark and offensive. Pain here, as in other forms of malignant disease of the uterus, is not a constant symptom. The uterus is usually found to be enlarged and soft, with the os patulous.

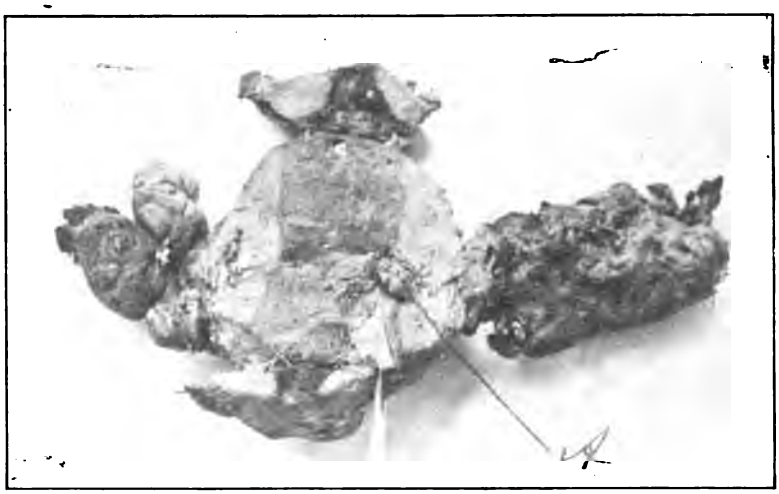
A conspicuous and distinctive characteristic of this disease is the marked tendency to early metastasis. The metastatic growths consist of the same elements as the primary tumor, but usually exceed the primary growth in extent and activity. The lungs and vagina are the most frequent loci of metastasis. Cough and bloody expectoration are in some cases the first symptoms to bring the patient to the physician, and in some instances the vaginal metastasis has been treated for the primary disease and the intrauterine tumor only discovered post-mortem. The brain, spleen, ovary, broad ligament, kidney, and liver may be invaded by metastatic deposits. Since our German colleagues called attention to this insidious and rapidly fatal form of malignant disease, numerous cases have been reported. Ladinski[1] has recently collected 132 authentic cases from the medical literature of the world. There is reason to believe that it is more frequent than is now supposed, and I doubt not that many unrecognized cases terminate fatally, or, if recognized, treatment is instituted too late. As the only means of cure consists in early and complete extirpation of the uterus, all suspicious cases of persistent hemorrhage following abortion and labor, especially after mole pregnancy, should be subjected to intrauterine exploration and microscopic examination of scrapings from the uterus. Early diagnosis and prompt operation are essential to successful treatment.

The following case, both in clinical history and objective symptoms, affords a typical illustration of the disease:

Mrs. L. E. W., aged 35 years; mother of six children, the youngest child 3 years old. In May, 1902, she missed her menstrual period, which was due on the fifth day of that month. On June 9, she observed hemorrhage from the uterus, which, though not excessive, was persistent. For several months beforehand she had suffered with pain in the deep pelvis and had received treatment from her physician for pelvic inflammation. She came under my care on June 18, presenting a letter from her family physician. The hemorrhage had been so profuse,

[1]American Journal of Obstetrics, April, 1902.

with clots, that she was believed to have miscarried. Upon examination the uterus was found displaced backward and fixed, with a distinct inflammatory mass (tubo-ovarian) on the left side. The temperature rose to 102° F. every day and she had several rigors. The hemorrhage persisted and was not controlled by curetage under antiseptic precautions. The bloody discharge continued and was quite offensive, and six days after curetage was more profuse than ever. On June 27, I did abdominal section and found a pyosalpinx on the left side, with the usual accompanying adhesions. The uterus was slightly enlarged and its walls were thickened and congested. The persistent bloody and offensive discharge had so impressed me



Bilateral section of uterus exposing endometrium; growth shown at point A.

with the probability of malignant disease that I decided to remove the entire uterus, as well as the diseased adnexa. This was done, and the abdomen closed, with gauze drainage per vaginam as usually applied in such cases. Convalescence was easy and uncomplicated, and the patient sat up at the end of two weeks, and left the hospital at the end of the fourth week in excellent condition. She has now regained her color, strength, and flesh, and is quite well.

A bilateral section of the uterus disclosed a distinct elevated nodule on the posterior wall near the left cornu. This nodule was so closely attached to the mucous surface and wall of the uterus that it appeared as if it were a projection of the uterine

muscularis through a hole in the endometrium. It was friable, bled freely when touched, and evidently was not placental structure. Its structure evidently was not that of a uterine myofibroma. In view of the clinical history, and especially the persistent hemorrhage and offensive discharge after miscarriage and curetage, I was convinced that the case was one of deciduoma malignum.

The specimen was submitted to careful microscopic examination by Dr. James Vance, Director of the Pathological Laboratory of the Hospital College of Medicine. Dr. Vance found the histological structure of the growth typical of deciduoma malignum, both syncytium and Langhans' cells participating.

Microscopic sections of the growth have been submitted to other competent observers, who have in every instance confirmed these observations.

DISCUSSION.

DR. J. HENRY CARSTENS, of Detroit.—I have grave doubt as to the existence of deciduoma malignum. It seems to me these cases are simply instances of sarcoma. It is simply a sarcoma planted on to the placental site. Sarcoma of the uterus is not a very common disease. The history of sarcomata involving the abdominal organs is practically and exactly the same as that which we find in cases of so-called deciduoma malignum, and pathologists have not been able to differentiate these tumors from other sarcomatous growths. A woman who has had a miscarriage, with more or less retention of membranes, and with more or less injury of the mucosa of the uterus, has a greater tendency toward the development of sarcoma than one without complications; hence, in such cases we should be on the lookout for the development of a malignant growth. In the case of a woman who, after a miscarriage, flows freely, we should curet the uterus repeatedly, make a careful microscopical examination, and be watchful, in order to make the diagnosis early of malignant disease, if possible, and remove the uterus, as Dr. McMurtry has advised.

DR. WALTER P. MANTON, of Detroit.—While I generally agree with my colleague from Detroit, Dr. Carstens, I think he is a little astray in his pathology regarding deciduoma malignum. I have been on the lookout for a case of deciduoma malignum ever since Sänger published his article, and as yet I have not met with one. I believe, however, there is such a thing. It begins in Langhans' cells and the syncytium. Many cases have been reported by the Germans.

One question I would like to ask Dr. McMurtry. He states in his paper that these cases are not very infrequent and that

they are apt to follow hydatidiform mole. Now, as hydatidiform mole occurs about once in 1,000 or 2,000 pregnancies, and if deciduoma malignum occurs largely following hydatidiform mole, is it not a fact that it cannot be a very common disease? I think that I have met during an experience of twenty-three years with but one case of hydatidiform mole.

DR. JAMES F. BALDWIN, of Columbus.—Six or eight months ago I was called to Gloucester, Ohio, to remove a cancer of the uterus, so diagnosticated by the attending physician. I found that the woman had had a normal delivery at term without difficulty some six or eight weeks previous to my visit. The afterbirth came away by itself and, so far as the attending physician knew, was entire and normal. Two weeks later, or thereabouts, hemorrhage continuing, another physician was sent for, who found, as he supposed, a piece of placenta, which he removed with the curet. Much to his surprise, two or three weeks later, in examining the patient, he found more tissue resembling afterbirth, and then made a diagnosis of malignancy. After making a careful examination myself, I confirmed his diagnosis, and told him that I believed we had a case of deciduoma malignum. Vaginal hysterectomy was at once performed. There was no involvement of the vagina, but on pulling down the omentum a secondary nodule as large as the end of my finger was found and removed. The patient's recovery was entirely satisfactory, but a few months later she died with evident involvement of peritoneum and lungs.

Two months ago I saw a patient in consultation who was supposed to be two months pregnant. The size of the uterus was that of a pregnancy of five months or thereabouts. The os was patulous. In making a careful examination I discovered that we had a hydatidiform mass. My experience has been greater than Dr. Manton's in this direction, as I have seen at least half a dozen such cases. The woman was removed to the hospital, and the next day I removed a hatful of hydatids. The hemorrhage following the removal was terrific, and, as the uterine walls were so infiltrated that they could not contract, the cavity was packed with gauze filled with alum. This packing was removed on the second day, but some infection occurred, as is usually the case when the uterus is packed for a postpartum hemorrhage. I had remarked to my assistants at the time that I did not like the infiltrated condition of the uterus and feared deciduoma. The uterus became somewhat reduced in size after a while, but the evidences of disease were so manifest that about six weeks later I resorted to vaginal hysterectomy. The uterus is still in the hands of the pathologist, but the right horn was in about the condition seen in cases of deciduoma malignum. (The pathologist reported later that such was the character of the growth.)

DR. CARSTENS.—You say that you found a secondary nodule in the first case. Did you have a microscopical examination made?

DR. BALDWIN.—No; it was not made.

DR. J. H. BRANHAM, of Baltimore.—It seems to me the cases of deciduoma malignum reported from Germany, particularly Sänger's cases, were instances in which there appeared to be a general malignant condition, a degeneration of the membrane lining the fetus and lining the inner side of the uterus, and not cases in which there was a single nodule, as was the condition in the case operated upon by Dr. McMurtry.

DR. MCMURTRY (closing the discussion).—Dr. Manton is correct in saying that deciduoma malignum is comparatively rare. That is the reason why I presented the subject and reported this case.

The views expressed by Dr. Carstens are exactly a repetition of the manner in which these researches were received in the Obstetrical Society of London, when Sänger's investigations were first presented there. The London surgeons with one accord opposed the idea that deciduoma malignum was a distinct pathological entity, holding that it was nothing but sarcoma developing at the site of the placenta. If you will refer to the *British Gynecological Journal* for August, 1902, and also the succeeding number, and read the paper of Dr. Halliday Croom and the discussion before the British Gynecological Society, participated in by men of large experience, you will find they have now abandoned entirely their previous utterances of a few years ago. Since their attention has been directed to this matter they have made clinical and pathological studies of the cases that have been observed there. If you take Cullen's work on "Cancer of the Uterus," you will find an excellent chapter presenting the results of clinical and pathological studies of this form of malignant disease of the uterus, and you will find therein the distinction between this disease and the ordinary presentation of sarcoma of the uterus. It is an epithelioma, and not a sarcoma. It does not have the clinical history of sarcoma. The metastatic process is different from sarcoma. If you will refer to the last number of the *British Gynecological Journal*, and the article by Ladinski in the *American Journal of Obstetrics* for April, 1902, you will see that this subject has been carefully reviewed, the object being to distinguish between sarcoma and epithelioma. Careful observers are agreed that deciduoma malignum is a distinct pathological entity.

DR. CARSTENS.—Are these secondary growths different from ordinary sarcoma or not?

DR. MCMURTRY.—They are. They are different histologically and clinically. The disease proceeds with great rapidity. Metastatic deposits occur more frequently in the lungs than in any other part of the system, next to the vagina, and they are different in their histological structure from sarcoma.

With reference to the remarks of Dr. Branham, the pathological exhibition of the disease, according to Sänger's observation, has been like that described in my case. Unless deciduoma malignum is recognized early and complete hysterectomy done, the patient will succumb in a short time.

PERFORATING ULCERS OF THE DUODENUM.

By JOHN B. MURPHY, M.D.,

AND

J. M. NEFF, M.D.,

CHICAGO.

THE subject of duodenal ulcerations is always an interesting one, both on account of the extreme rarity of the disease and the many difficulties which attend an accurate diagnosis. Although a number of articles have appeared within the past few years, the literature is still meagre. Dr. Robert F. Weir, in his address before the American Surgical Association in 1900, gave us the masterpiece on the subject of duodenal perforations. He brought the literature up to date (April, 1900), and recorded all cases operated on for acute perforation previous to that time.

The purpose of this article is to review briefly the salient points in the etiology, pathology, and diagnosis of duodenal ulcers, and to consider especially the surgical treatment of perforations. We have collected from the literature nineteen additional cases, including one of our own, in which operations were performed for this complication.

FREQUENCY.—The relative frequency of duodenal ulcer as a cause of death is given by Weir[1] from collected statistics as two-tenths per cent. Kinnicutt,[2] from an analysis of 30,000 postmortem records, gives it as four-tenths per cent; Perry and Shaw's figures are practically the same. Krug gives the proportion as forty-four hundredths. Von Wyl found three duodenal ulcers in 12,806 postmortem examinations. The ratio of gastric to duodenal ulcers, given by Burwinkel (Weir), is 12 to 1.

AGE.—Duodenal ulcerations occur at all ages. Collin's statistics for the different decades is as follows, in descending order of frequency: (1) 30 to 40 years; (2) 40 to 50 years; (3) 20 to

30 years; (4) under 10 years; (5) 50 to 60 years; (6) 60 to 80 years; (7) 10 to 20 years. Hahn[6] records a case in a child 1½ days old, in which there was a duodenal ulcer close to the pylorus and a second one lower down. These must have been formed before any food reached the stomach. Vanderpoel Adriance[3] reports, in an infant of 10 months, an ulcer on the posterior wall of the duodenum just below the pylorus, and Oppenheimer has collected 15 cases of melena neonatorum resulting from duodenal ulcer. Chvostek (Moynihan)[4] found the ulcers in children from a few hours to a few weeks old. Von Wyl (Laspèyres)[5] states that of all cases under 10 years of age, fully half are in the first year and many in the first few days after birth. He states that the latter are not due to intrauterine causes, as some have supposed, but rather, in all probability, to thrombosis of the umbilical vein with embolism of the vessels of the small intestine.

Thrombosis of the mesenteric veins from this source is possible, as a branch of the umbilical vein communicates with the portal; the thrombus may extend into and occlude the latter, thus producing necrosis of the intestinal wall by venous stasis. We cannot, however, understand how an embolus from this thrombus, passing through the general circulation, could be arrested in the duodenal arteries. While the embolus might be arrested in these vessels in fetal life, as there is no pulmonary circulation, it would be impossible for this to occur postnatal, as then the ductus arteriosus is obliterated and the embolus would be arrested in the lung. If portal thrombosis were an important factor in the production of the ulcerations, it would seem that they should be more frequent in pylephlebitis. This, however, is not the case, as they are not mentioned by Bryant (Guy's Hospital Reports, 1897) in any of the 20 cases of pylephlebitis analyzed by him. In one case it was thought that a duodenal ulcer was the cause of the thrombosis, but in none were ulcerations found as a sequence.

As regards the other extreme of life, Krammhals observed a case in a woman 79 years old, and Merkel found an ulcer in the duodenum of an old woman of 94 years (Moynihan).

Sex.—The great majority of duodenal ulcers are found in males. Laspèyres says that men are affected two or three times oftener than women, and quotes from the various authorities the following ratios: Krauss, in 64 cases, found the ratio in men to women as ten to one; Lebert, in 39 cases, four to one; Trier, in

54 cases, five to one; Chvostek, in 61 cases, three to one; Oppenheimer, in 71 cases, two and a half to one; Collin, in 257 cases, four to one.

Of Weir's cases, 176 in number, 144 were in men and 30 in women. Dr. Lee Dickinson (Clarke and Franklin)[7] maintains that the women in whom duodenal ulcers occur are not young, but in two cases reported by them they were under 20 years of age.

Coincident Lesions.—1. *Burns:* That duodenal ulcerations are frequently associated with extensive burns is well known. In Collin's 297 cases burns were the cause of the ulcers in 38 instances. Holmes says that the ulcers appear in from seven to fourteen days after the burns; they may be much earlier (Weir). Probably the correct explanation in these cases is that a septic infarct has been produced by the lodgment of an embolus which entered the circulation at the site of the burn. The theory of toxic products in the bile (Hunter) is not so plausible as the embolic. Neither of these theories has a good pathologic basis. Paget believed that nervous influences played an important rôle in the production of the ulcers after burns.

2. *Kidney Disease,* especially the various forms of chronic nephritis, is very frequently associated with ulcerations in the duodenum. The reasons for this are not clear, and so far no satisfactory explanation has been offered to account for the association, although a number of theories have been advanced.

Boas claims that the necrotizing effect of urea or its derivative, ammonium carbonate, circulating in the blood, is the active agent, but it is more likely that the presence of sclerosed vessels in the duodenal wall, with the consequent malnutrition of certain areas, is the real cause (Kinnicutt).

Poynton[8] observed one case which presented no symptoms during life, but in which, after death, there were found duodenal ulcers associated with cirrhotic kidneys.

3. *Pulmonary Tuberculosis:* In some of the cases associated with advanced pulmonary tuberculosis, the duodenal lesion was probably originally a cheesy degeneration of a solitary follicle, with secondary digestion of the caseous material by the gastric juice. Satterthwaite[9] reports a case of tubercular enteritis in which there were ulcers in the duodenum. He believes that tuberculosis is an important factor in the etiology. A family history of tuberculosis is sometimes obtainable, as in four out of five cases reported by Burwinkel.[10]

4. *Trichinosis* and duodenal ulcer have been reported by Ebstein and Klob. Duodenal ulcer is also occasionally found as a complication in heart and liver diseases, carcinoma, extensive internal suppurations, frostbites, erysipelas, septicemia, and pemphigus. Bolton Carter[11] thinks that in some of his cases the ulcerations in the stomach and duodenum might have followed the septic condition of the peritoneum. The hemorrhage from the stomach and duodenum which sometimes follows operations, not necessarily on the abdomen, may be from fresh ulcerations (Clarke and Franklin). Eiselsberg recorded seven cases of hematemesis following laparatomies in which fresh ulcers were found in the stomach and duodenum. Ladevèze[12] thinks that there is often a relationship between previously existing infectious diseases and duodenal ulcers. Duodenal and gastric ulcers are frequently found together, so frequently, in fact, that many writers suppose their etiology is identical. Röschmann reported three cases of duodenal ulcers associated with ulcers of the esophagus.

THEORIES OF CAUSATION.—These are almost as numerous and varied as the number of observers who have studied the condition. The most rational, and at the same time the most widely accepted, theory is that duodenal ulcerations are due to the same cause as gastric—namely, the effect of the gastric juice on a circumscribed portion of the mucosa, the vitality of which has been impaired. This view is held by Virchow and has been proven experimentally (Laspèyres).

According to Riegel, hyperchlorhydria is an essential factor, and he believes that many of the corrosive ulcerations follow primary hemorrhagic erosions. Leube says that hyperchlorhydria is frequently present in duodenal ulcers, and Koch and Ewald have produced the ulcers by giving to animals hydrochloric acid in 5:1000 solutions. The duodenum is not protected from the acidity of the gastric juice above the papilla, through which empty the alkaline secretions of the pancreas and liver, and it is in this first portion that the great majority of the ulcers occur.

Talma believes that they are due to spasmodic contractions of the pylorus, which produce an anemia of the adjacent parts, closure of the blood vessels, and hemorrhage. He thinks this view is strengthened by the fact that the majority of the ulcerations are near the pylorus. We cannot understand how such a condition could possibly be caused by spasms of the pylorus,

as contraction of this portion is part of its normal function and could not interfere with the blood supply to such an extent as to bring about hemorrhage and necrosis, especially as the blood supply for the duodenum does not come through the pylorus.

Box[13] favors the infectious theory because the ulcers many times appear opposite to each other, or in close proximity, and present a surrounding zone of inflamed and softened tissue. He also calls attention to the fact that most of the intestinal ulcerations below the duodenum are conceded to be of infectious origin.

Zimnitski[14] determined, by a series of experiments on animals, that there was an etiological relation between retention of bile and ulcers of the duodenum. He thinks that the same conditions which are essential to the development of the ulcers are present in biliary retention from any cause. These are hypersecretion, local circulatory disturbances, stasis—dependent upon changes in the liver—and anemia or hydremia with decrease in the alkalinity of the blood.

Boas believes that rough food, alcohol, and tobacco are factors in the etiology. Laspèyres says that the lesion is frequently found in habitual drunkards. Alvazzi, in three cases of chronic lead poisoning, found round ulcers of the duodenum. Foreign bodies which have been swallowed, as in certain cases of dementia, may produce ulcers by pressure (Pittiet and Deny).

From an analysis of the clinical histories reported, and consideration of the various theories on the genesis of duodenal ulcers, it appears to us that the causes may be grouped in the order of their importance, as follows: (1) hyperchlorhydria, (2) local infection, (3) embolism or thrombosis, (4) foreign bodies. We are, however, forcefully impressed with the close relationship between duodenal ulcerations and diseases of the organs of elimination, as the skin in burns, pemphigus, and erysipelas; the kidney in various diseases compromising elimination; and the lung in tuberculosis. We believe the defective elimination has an important etiological relation.

Pathology.—Moynihan divides duodenal ulcers into acute and chronic—acute when there is rapid destruction tending to perforation; chronic when the symptoms are latent and the pathologic processes passive. He says that the acute ulcer may be but an early stage of the chronic.

The ulcerations are usually single, though they may be multi-

ple, in which case they are often grouped in the first portion of the duodenum. Occasionally two ulcers are opposed to each other, suggesting an infectious cause. An acute perforating ulcer may be found with a chronic one.

In Collin's 253 cases, 195 (83.6 per cent) were solitary. In 26 cases there were two ulcers; in 3, three ulcers; and in 4, five ulcers.

SITUATION.—Perry and Shaw, in 149 cases, found the first portion of the duodenum involved 123 times, the second portion 16 times, the third and fourth portions twice.

In 8 cases the ulcers were scattered (Laspèyres).

Weir gives the analysis of Collin's statistics for perforating ulcers as follows: In 119 cases the lesion was in the first portion. Of these, 68 were in the anterior wall, 39 in the posterior, 10 in the superior, and 1 in the inferior. Of 8 cases involving the second portion, 5 were on the internal wall, 2 on the posterior, and 1 on the external. Of 4 cases affecting the third portion, 3 were on the anterior and superior walls and 1 on the posterior.

Of the perforating ulcers collected by Perry and Shaw, 48 were in the first division, 2 in the second, and 1 on the border line between the first and second. In 28 cases the location on the wall was not mentioned; in 19 the anterior wall was affected; in 6, the posterior; and in 3, both.

Wanach says the ulcers most frequently perforate the anterior wall of the horizontal upper portion. In Oppenheimer's cases the perforation was 34 times in the transverse portion and 3 times in the descending. In 19 of the 34 cases the wall was not mentioned. In the other 15 the anterior wall was involved 11 times, the posterior 3 times, and the superior once. Nothnagel says: "There is little or no difference in the frequency of perforation of the anterior and posterior walls."

DESCRIPTION OF THE ULCERS.—They may be circular or elliptical in shape, and, if the latter, are frequently situated transverse to the long axis of the bowel. They are often cone-shaped, with the apex of the cone toward the peritoneum (Marocco). The margins and base are commonly very tough and dense and exhibit but feeble attempts at repair. If large, the borders may become irregular, but usually they possess a sharply-cut, punched-out appearance. In old cases the edges are apt to be much thickened. The floor of the ulcer is usually clean and may be formed by any of the coats of the bowel or by adherent organs. Dr. Poynton, in necropsies on 8 cases of chronic duodenal ulcers,

found that in all of them new floors had been formed by adhesions to neighboring structures.

In size they vary from one to three and a half centimetres in diameter—or from the size of a lentil to that of a dollar. If perforation takes place, the opening is usually much smaller than the ulcer itself, being rarely larger than a quarter of an inch in diameter and having comparatively thin edges.

PERFORATION.—Laspèyres gives the following statistics as to the frequency of perforation: Chvostek, in 63 cases, noted it 27 times—42 per cent; Collin, in 262 cases, 181 times—69 per cent: Oppenheimer, in 79 cases, 38 times—48 per cent.

Perforation may take place into the general peritoneal cavity or into the retroperitoneal tissue. Of Bolton's 5 cases, 3 perforated into the general peritoneal cavity, 1 behind the peritoneum, and 1 toward the under surface of the liver, to which it was adherent. Aside from the usual sites of perforation, adhesions may form between the duodenum and the surrounding viscera, and perforation take place into any of them. Weir records cases where the gall bladder, aorta, vena cava, portal vein, superior mesenteric vein, and hepatic artery have been perforated. A gastro-duodenal fistula has never been found the result of the perforation of a duodenal ulcer.

If perforation takes place into the free peritoneal cavity before adhesions have formed, a general septic peritonitis is the result. In these cases, where the perforation is in the first or upper half of the second portion, the fluid is usually discharged on to the upper surface of the mesocolon and follows the ascending mesocolon to the right iliac fossa, before the diffusion becomes general. It is for this reason that a perforative appendicitis is so often simulated. If perforation takes place slowly, giving time for adhesions to form, a localized abscess may result, the situation of which will depend upon the position of the perforation. If this be in the superior wall of the upper portion, the abscess is frequently subphrenic and always to the right of the falciform ligament. Nowak collected 58 cases of subphrenic abscess, 6 of which were due to perforating ulcers of the duodenum. Seven similar cases were reported in Maydl's monograph. In some instances the abscess forms beneath the liver and does not invade the subphrenic space. After the formation of the abscess it may burst in any direction—back into the duodenum or the other hollow viscera in the neighborhood, upward into the pleural or pericardial cavities, or even externally, as in a case recorded by

Lumeau and Buoquoy. Planchard reports one case in which the rupture of a localized abscess led to a general peritonitis.

That duodenal ulcers heal spontaneously is proven by the findings post-mortem. Perry and Shaw found evidences of repair in 50 per cent of their cases (70 autopsies), in some of which the cicatrices had produced narrowing of the bowel. Krug, in 1,220 autopsies, saw 30 cases of cicatricial healing. Laspèyres says that very few completely cicatrized ulcers have been observed, and that stenosis, with obstruction to the common bile duct, often results after healing. Dilatation of the duodenum on the proximal side of the contraction has been observed, and in some cases has been so great as to necessitate gastro-enterostomy.

The tendency to development of carcinoma in the scars is not nearly so great as in gastric ulcer.

From the absence of manifestations of tissue reaction in the margins of many perforating ulcers, it would seem probable that the pathologic process was an extremely rapid one, such as might be expected from the action of the digestive secretions. In the case observed by us there was not the slightest inflammatory reaction in the margin of the opening, no evidence of tissue proliferation, and no effort at adhesions. The margin was perfectly smooth and there was no vascular injection at the periphery.

Symptoms.—The symptomatology of duodenal ulceration is notoriously uncertain and inconstant. In some cases (more than half in which the lesions are found in necropsy) there had been no symptoms indicating the disease. In many the symptoms are indefinite, and often so mild that the patient does not think it necessary to consult a physician; while, again, in others they are well marked and severe. The symptoms are much like those observed in gastric ulcer, and Moynihan believes the two are often associated.

The three cardinal symptoms, in the order of their importance, are: (1) pain, (2) melena or hematemesis, (3) vomiting. They may be single or combined and any one predominate.

Pain: In general, the pain may be said to resemble that of gastric ulcer, but is usually much less severe, because the duodenum is more fixed and the stomach contents are less irritating. In some cases it is merely a sense of discomfort, while in others it is severe and intolerable. Its character is burning, or "boring," and it may radiate downward and to the sides. Boas

says that it rarely goes through to the back, and Riegel and Burwinkel state that it never radiates in this direction. Marocco, on the other hand, says the pain is usually situated in the right upper quadrant of the abdomen and radiates to the shoulder and tenth and twelfth dorsal vertebræ. Schwartz has also noted the right shoulder pain. The situation of the pain is in the right hypochondriac region, about two centimetres below the gall-bladder in the right parasternal line, though it may be in the epigastric or umbilical region. It comes on from one-half hour to six hours after a meal, but is characteristic when it makes its appearance from two to four hours after the ingestion of food. Moynihan says that the nearer the ulcer is to the cardia the earlier is the onset of pain after eating. In some cases the pain has been sudden in its onset and colicky in character. Rarely it has been observed in the left hypochondriac region, as in the case recorded by Lissjansky,[15] where it came on in this region in severe paroxysms, the right side not being even very sensitive to pressure. In a case reported by Poynton the severity and long duration of the pain were important features, and it resembled that due to erosion of the vertebræ, or abdominal aneurism. He also cites an instance in which the pain was excessive at night. Pressure to the right of the twelfth thoracic vertebra occasionally elicits pain, but tenderness, if it be present at all, is usually found on deep pressure over the duodenum.

Hemorrhage may manifest itself either through the stomach or bowels, and is caused by the erosion of a blood vessel. In some cases it is the first symptom to attract the patient's attention. Weir states that it is present in one-third of the cases of non-perforating ulcer, and the blood may be dark and "tarry" or, more rarely, bright red in color. The hemorrhage may come from any of the blood vessels in the neighborhood, but most often from the pancreatico-duodenalis, the gastro-epiploica dextra, and the pancreatic arteries.

Ladevèze divides the cases of hemorrhage into three classes: (1) the fulminating form, which speedily ends in death; (2) the acute form, in which hemorrhages of less intensity are frequently repeated and finally exhaust the patient; (3) the chronic form, in which they are continuous and persistent, but often unperceived.

In Perry and Shaw's 60 cases which presented symptoms,

hematemesis was noted fourteen times and melena nine times. In Oppenheimer's 34 cases of hemorrhage, 8 were from the stomach, 10 from the bowels, and 16 from both. The patient may become extremely anemic and even bleed to death before the blood is passed or vomited. Repeated small hemorrhages may cause death from cachexia, but this may be due, in some measure at least, to the vomiting which is often present.

Vomiting is relatively rare in duodenal ulceration. It occurs in about 17 per cent of the cases (Oppenheimer), and is not usually characteristic, unless it comes on from two to four hours after a meal. It often takes place at the height of the painful paroxysm, and is not always dependent upon taking food. The vomitus may contain bile and partly-digested food, with or without an admixture of blood. The vomiting may relieve the pain.

Very little has been done in the examination of the stomach contents. Leube and Reckmann each had a case of subacidity, and Devic and Roux described one of hyperchlorhydria (Laspèyres).

Icterus is rare. Collin mentioned it but nine times in 262 cases. When present it may be due to tumefaction of the mucous membrane of the common bile duct in the cases of active ulceration, or to cicatricial contraction in those of long standing.

Other symptoms, which have been described by various observers, are: (*a*) digestive disorders, usually resembling hyperchlorhydria, or less frequently chronic gastric catarrh. *(b)* Paroxysmal dyspnea, the origin of which, although not certain, is probably reflex. *(c)* Neuralgias, also reflex, affecting various portions of the abdomen and chest. *(d)* Palpitation of the heart.

It is rarely possible to palpate a tumor mass in case of a duodenal ulcer. When present it is due to a localized peritonitis or secondary enlargement of the head of the pancreas.

The course of the great majority of cases is essentially chronic and seldom tends toward spontaneous recovery. It is often marked by exacerbations of the symptoms, followed by intervals of good health. Chvostek has recorded a case in which the symptoms had been present off and on for thirty-nine years. This chronic course, however, is not taken by all of the cases, for in some the first symptom may be a profuse or even fatal hemorrhage, or the sudden development of a general peritonitis due to the perforation of an ulcer.

PERFORATION.—As mentioned above, many of the cases of perforating ulcer present no symptoms whatever prior to the onset of those due to the perforation. Weir states that in 20 out of 25 instances of perforation analyzed by Schwartz, the patients were in good health previously, and in only 5 cases had there been gastric symptoms. In his own collection of 51 cases treated by operation, gastric symptoms formerly existed in 25 out of 34. Of Perry and Shaw's 151 cases, 91 presented no symptoms until perforation or hemorrhage appeared. The symptoms due to perforation are usually sudden and violent in their onset, often coming on when the patient is at work, frequently after the ingestion of a full meal. The reason for this is probably an increased tension within the duodenum, caused by the contraction of the abdominal muscles, which press upon the stomach and force its contents out through the pylorus.

The first symptom of perforation is pain, which is very severe and usually referred to the epigastrium or right hypochondrium, although in rare cases it may be in the centre of the abdomen or to the left. The pain may be so intense as to prostrate the patient and produce rapid collapse resembling that of fat necrosis. Stevens (Weir) records a case in which death occurred twenty-one hours after the onset of symptoms of perforation. Moynihan did not observe that there was any tendency toward primary localization of pain in the right hypochondrium, although in many cases, after a few hours, the symptoms all point toward a lesion in the right iliac fossa. This is explained by the fact that the fluid gravitates into that region along the ascending mesocolon. In the cases collected by Schwartz the pain after perforation was seven times in the right side below the false ribs, five times in the epigastrium, four times in the left side, and twelve times in the region of the right costal border. The pain soon became general (Laspèyres).

Following the pain the other symptoms of general peritonitis rapidly make their appearance. These are: vomiting, elevation of temperature, abdominal tenderness (which at first may be localized to the right hypochondriac and right iliac regions, but soon becomes general), tympanites, coprostasis, and often shock.

On percussion of the abdomen, if several hours have elapsed since perforation took place, there is usually flatness in right flank, with tympany above. Liver dulness may be obliterated.

The line of dulness, laterally, may shift with the change of position of the patient, because of the gravitation of the fluid which has escaped from the duodenum.

The peritonitis, instead of becoming general, may localize, if previous adhesions have formed, as a subphrenic or subhepatic abscess, which may secondarily rupture into any of the neighboring viscera or occasionally into the free peritoneal cavity. If the opening is retroperitoneal or in the superior wall of the upper portion, a subphrenic abscess containing pus and gas is likely to be formed, the symptoms and physical signs of which are much the same as in a similar condition from any other cause. It is important to remember, however, that in the cases resulting from duodenal perforation the abscess is always to the right of the falciform ligament, and not to the left of it as after gastric perforations.

In the cases of perforation there is, primarily, an acute leucocytosis. In our case, eight hours after perforation there were 23,400 leucocytes per cubic millimetre, showing a pronounced reaction of the peritoneum to the irritation and toxicity of the escaped fluid. The leucocytosis is quite in contrast to that of fat necrosis of the pancreas and omentum, the other symptoms of which so closely resemble duodenal perforation.

DIAGNOSIS.—I. *Non-perforating Ulcer.* The diagnosis of this lesion is extremely difficult, especially in the absence of hemorrhage, and can be made only by careful attention to the various symptoms presented and the exclusion of all other probable disorders. At best the diagnosis must be a provisional one, as the symptom complex is rarely classic. Even when the hemorrhage is present Jackson says that it is not of much value in the diagnosis, as hemorrhage secondary to cirrhosis of the liver is often simulated.

Ladevèze gives as important symptoms in diagnosis the following: 1. Sudden intestinal hemorrhage occurring in the midst of apparently perfect health, repeated for many days, and producing a profound anemia. Hematemesis may come on before, or simultaneous with, the melena. 2. Pain to the right of the median line, appearing usually two to four hours after the ingestion of food. 3. Absence of gastric phenomena.

Differential Diagnosis.—1. *Gastric ulcer.* Of the diseases which must be considered in making a diagnosis, this stands first, and von Wyl says in 90 per cent of the cases it is impossible

to distinguish between the two. He gives the important points of differentiation of each as follows:

Gastric Ulcer.	*Duodenal Ulcer.*
1. Usually in women 20 to 35 years of age.	1. Most frequent in men.
2. Pain comes on soon after eating.	2. Pain two to four hours after eating and located in right hypochondrium.
3. Pain lessened by vomiting.	3. Vomiting does not relieve pain.
4. Vomitus contains mucus, food remnants, and often blood.	4. Vomiting more rare than in gastric ulcer and does not often contain blood.
5. Severe dyspeptic symptoms usually present.	5. Dyspeptic symptoms slight.
6. Melena rare.	6. Melena comparatively frequent.

2. *Irregular cholelithiasis,* with or without cholecystitis or cholangitis, may be difficult of exclusion, as in this condition the pain is referred to the duodenal region and intestinal hemorrhage may occur (Laspèyres). We have never observed an intestinal hemorrhage in cholelithiasis except with extreme cholemia. In cholelithiasis, if the pain be colicky, it is usually referred to the right shoulder, and there is a tender point just beneath the tip of the ninth costal cartilage, on the right side, at the end of deep inspiration. In about 400 cases operated by us for cholelithiasis in which gallstones were found, icterus, at any time in the course of the disease, was present in only 16 per cent of the cases, showing that icterus has but little value as a negative symptom in duodenal ulcers.

3. *Hyperacidity* without gastric ulcer may cause confusion in the diagnosis, according to Laspèyres. Both may give the same symptoms, especially pain which comes on several hours after eating, and sensitiveness in the pyloric region.

4. *Acute fat necrosis* is the most difficult disease in which to make a differential diagnosis from perforation of the duodenum. The pain in both is intense; the collapse or immediate depression is more pronounced in fat necrosis than in perforation. The vomiting is more persistent and severe in the early hours of fat necrosis (up to twelve or fifteen) than in perforation; the vomiting in the second twenty-four hours is less frequent in fat necrosis than in perforation. The collapse of the second twenty-four hours in fat necrosis is less pronounced than in perforation. Superficial or piano percussion note is resonant in fat necrosis, flat in perforation (in the right hypochondrium). Pain and

tympany are the same in both. There is an absence of leucocytosis in fat necrosis, and a pronounced leucocytosis in perforation of acute ulcers. This is the most important differential diagnostic manifestation. In fat necrosis there is rarely a primary elevation of temperature; in perforation there is usually a primary elevation of temperature.

5. *Intestinal obstruction* (mechanic ileus) may be mistaken for perforation. In obstruction the pain is usually of a colicky character; in perforation it is constant. In obstruction the vomiting increases in frequency with time; the same with perforation. In obstruction there is pronounced increase in the intestinal peristalsis; in perforation there is an absence of peristalsis. In intestinal obstruction there is never a primary elevation of temperature; in perforation there is a primary elevation of temperature. With intestinal obstruction there is no leucocytosis; in perforation there is a pronounced leucocytosis. With both there is a coprostasis; in obstruction it is due to mechanical causes, in perforation it is due to the paralysis of peristalsis induced by the peritonitis.

Other conditions which may cause difficulty in diagnosis are: (*a*) pancreatitis and suppurations in the liver (Bolton), and (*b*) tabes dorsalis (two cases by Box).

II. *Perforating Ulcer.* In only 2 of the 51 cases collected by Moynihan was a correct diagnosis of perforating duodenal ulcer made—one by himself, and another case by Perkins and Wallace.

The clinical picture of perforative appendicitis is so accurately copied in cases of perforating duodenal ulcer that in 49 of those reported by Moynihan, 18 were operated upon for appendicitis.

After the primary shock has passed, the course of the peritonitis differs from that following gastric perforation. In the latter general peritoneal infection rapidly develops, while in the former there is an earlier involvement of the peritoneum in the right iliac fossa. The reason for this is given under Pathology. In the majority of cases it will be possible to make only a general diagnosis of perforative peritonitis, as previous symptoms which point to the duodenum have not *usually* been present. This was done in our case.

PROGNOSIS.—It is probable that the majority of duodenal ulcers will perforate the intestinal wall sooner or later, and the prognosis is therefore most grave (Bolton). Reckmann states that one-half of the cases result fatally from perforation into the

peritoneal cavity (Weir). In 262 cases collected by Collin, diffuse and fatal peritonitis occurred 135 times, or 51 per cent.

The prognosis in the cases of perforation will depend largely upon the length of time which has elapsed between the perforation and the operation. In Moynihan's collection of 51 operated cases of acute perforating ulcer there were 8 recoveries. Of these, 2 were operated on thirty hours after perforation; 1, twenty-eight hours after perforation; 1, twenty-five hours after perforation; 1, fifteen hours after perforation; 1, twelve hours after perforation; 2, ten hours after perforation. The average time of operation after onset of symptoms was twenty hours in the cases that recovered.

In 20 cases of perforation treated by operation collected by Darras, 17 died and 3 recovered—a mortality of 85 per cent. Bolton Carter collected 59 published cases of perforating duodenal ulcer. Of these, 27 died without operation, the lesion being found post-mortem. The remaining 32 cases were operated on, with 11 recoveries—a mortality of 68.5 per cent.

Lennander says that the statistics so far published (1898) show that from one-fourth to one-third of the cases of perforating ulcer of the stomach and duodenum operated on are saved, and that the prognosis depends on the time of operation after perforation and on the quantity and quality of the fluid found in the peritoneal cavity.

Laspèyres gives the following statistics of the results of surgical treatment for the general peritonitis following duodenal perforations: of 18 cases in which the exudate was drained only, 17 resulted fatally and 1 died four months later of general peritonitis. Of 15 cases in which the perforations were found and closed, 5 recovered—33⅓ per cent. In 79 cases collected by Weir and Foote, the mortality was 71 per cent. In the 51 cases collected by Weir, 25 had the opening closed by suture. Thirteen of these were operated upon thirty hours after the onset of symptoms, and all resulted fatally. In 12 others, less than thirty hours had elapsed, and of these 8 survived—a mortality of 33⅓ per cent. Pagenstecher gives the mortality as 60 per cent for perforations that have been found and sutured. In our collection, the length of time that had elapsed was given in only 4 cases—not a sufficient number from which to make deductions of value.

Surgical Treatment.—We shall concern ourselves with the surgical treatment of the perforations only, and not consider

the various operations, such as gastroenterostomy, excision, and the like, which have been advocated for the non-perforating ulcers.

The cases in which perforation has taken place should be submitted to operation at the earliest possible moment, as all statistics show that the earlier the operation the greater are the chances of recovery. The abdomen should be opened, as recommended by Weir, through an incision four to six inches in length, in or along the outer edge of the right rectus muscle. The transverse incision is rarely necessary, as ample room is secured without it.

In most cases the diagnosis of perforative appendicitis will have been made, and this organ is the first to be examined. The gall-bladder is next inspected, and, after determining that it is not the seat of perforation, the region of the duodenum is explored. When the opening is found, it is closed with a double or triple row of interrupted silk sutures of the Lembert type, taking care to bring large areas of serous surface in apposition without tension. Lennander says: "If it is not possible to close the opening in this way, the edges should be brought together as well as possible and the line of suture covered with omentum." This method should never be resorted to; it is insufficient and dangerous. There is a well-recognized rule governing the closure of intestinal fistulæ wherever situated, viz.: where the intestinal wall is indurated and adherent to neighboring tissues, it must first be sufficiently liberated and freed to admit of an easy apposition of its convex surfaces with two rows of sutures. The failure to free the intestine from neighboring structures is the most common cause of failure of union. The line of suture should usually be transverse to the long axis of the bowel, in order to avoid constriction when healing is complete, and the line of suture should always be supplemented with an *omental* support.

After closure of the perforation the peritoneal cavity is thoroughly cleansed by sponging or irrigation, and the abdominal wound closed, with or without drainage, depending upon the pathologic condition of the peritoneum at the time of operation.

It is not best to attempt to excise the ulcer, as the danger is greatly increased by this procedure. Bolton, however, recommends excision and closure by Czerny-Lembert sutures, as in pyloroplasty. For cleansing he advocates irrigations with saline solution, through the Chamberlain tube, until the fluid

returns clear; and afterward sponges the peritoneum dry. He puts in a gauze drain down to the line of suture. Some surgeons recommend the use of glass drainage tubes, inserted into the pelvis through a separate incision above the pubes. Peritoneal irrigation should not be resorted to, except where there is a pronounced exfoliation or destruction of the endothelial covering of the intestines. This destruction is recognized by the absence of peritoneal gloss and the presence of a roughened or blistered serosa. We have taught as a result of our experiments, since 1892, that the peritoneum is not a lymph sac, as physiologists would have us believe. Under normal physiologic conditions the peritoneum absorbs, like the skin, only small quantities. When it becomes blistered or eroded, like the skin, it becomes a rapidly absorbing surface. Its endothelium is more easily removed, abraded, or destroyed than the epithelium of the skin, and therefore requires more respect and more delicate treatment. Where the peritoneum is not eroded it should not be irrigated. When it is eroded irrigation may be of service. In our practice we have used solutions in the peritoneal cavity only fourteen times since 1889, and believe that better results can be secured by delicate swabbing and extensive tubular and gauze drainage.

After operation the patient should always be put into the sitting posture, so that all fluids may gravitate into the pelvis, as it is well known that the pelvic peritoneum can take care of a large quantity of infectious material, as absorption takes place *slowly* and the patient is not immediately overwhelmed with the toxic products.

Periduodenal abscesses are to be opened through the abdominal wall in front, and subphrenic abscesses through the anterior or lateral walls of the abdomen or in the low intercostal space posteriorly.

The following is the history of a case which we recently operated on at Mercy Hospital: F. K., laborer, aged 24 years. Family history: negative. Personal history: had always been well and worked hard; appetite had been good and bowels regular; no previous illnesses; claims that prior to onset of present illness he was perfectly well and had had absolutely no gastric or intestinal symptoms. Admitted to Mercy Hospital May 22, 1902, at 6 A.M.

Illness began at half-past 2 on the morning of admission, with sudden and severe cramping pain in abdomen. Patient had been working on night shift at the time of onset, but had to

stop his work on account of the severity of the pain. In a few moments the pain subsided, but returned shortly afterward and continued until his admission to the hospital. It was diffuse over the abdomen at first, but soon became more intense, and at the time of admission was localized in the right side. He walked several blocks to the hospital. The abdomen was very tender on pressure, especially on the right side. About 5 A.M., before coming to the hospital, he swallowed a little coffee, which caused nausea and vomiting. On examination of patient abdomen was found uniformly distended and motionless during respiration. It was very sensitive all over, but more so on the right than on the left side. Over the entire right side there was dulness on light piano percussion, resonance on deep percussion. The right abdominal muscles were very tense and would not permit deep palpation. On admission pulse was 68 per minute, and temperature per axillam 98° F. At 8 A.M. temperature by mouth was 100° F. and pulse 74 per minute. A leucocyte count was made and 23,400 per cubic millimetre found. A diagnosis of perforative peritonitis was made, probably of appendicial origin. The patient was at once prepared for operation. His depression was not sufficiently marked to consider it a case of fat necrosis.

Operation (eight hours after the onset of symptoms).—Incision was made through the outer border of the right rectus muscle, as for appendicitis. When peritoneum was opened there was an immediate escape of viscid green fluid, which was odorless and clear with the exception of some white flakes floating in it. The fluid appeared to be tinged with bile. The peritoneal covering of the intestine was considerably congested and reddened; an adherent fibrinous exudate was present in patches here and there. The endothelial covering, however, was not blistered or eroded; it seemed to be intact throughout.

The caput coli was easily brought into the field. The appendix was examined; it was thickened and adherent to the under surface of the caput coli, showing that it had been the seat of previous inflammation; as there was no acute inflammation and no perforation at this point, it was not the cause of the present trouble. The peritoneal cavity continued to fill with fluid as rapidly as it was sponged out, and this fluid seemed to come from the direction of the gall-bladder. The caput coli was replaced and the incision was extended upward toward the costal arch. The gall-bladder was next carefully examined,

but found only slightly thickened and moderately distended with bile. The liver extended slightly below the costal arch. The stomach was examined, but found normal. Examination of the duodenum showed a perforation, about one-eighth of an inch in diameter, in the anterior wall, its outer portion about one and one-half inches below the pylorus. Through this opening jets of the greenish fluid came with each inspiration. The perforation was closed with three rows of silk Lembert sutures, and the peritoneal cavity was sponged out and irrigated with normal salt solution. The abdomen was closed by means of separate layers of catgut for the peritoneum and fascia, the skin being approximated with a continuous silkworm-gut suture. No drainage was used. One quart of saline solution was injected into the peritoneum just before complete closure of the abdomen, and was retained. In closure without drainage I had the support of Dr. Roswell Park and Dr. Arthur Dean Bevan, who were present at the clinic.

The notes on his condition after the operation are as follows: May 22: 10 P.M., pulse 140, temperature 101°, resting nicely. May 23: 8 A.M., pulse 110, temperature 99.2° F., quite thirsty, but no pain; 8 P.M., pulse 98, temperature 99° F., somewhat restless, but no pain. May 24: 8 A.M., pulse 74, temperature 98.6° F., some pain in abdomen, considerable tympanites; magnesii sulphas and spiritus terebinthinæ administered by high enema; patient passed considerable flatus and was much relieved; 8 P.M., patient resting well, pulse 76, temperature 99° F. May 25: 8 A.M., pulse 72, temperature 98.6°, patient had a comfortable night; 8 P.M., pulse 96, temperature 98.6°, had some pain during the day and was given an enema, passing considerable flatus afterward. May 26: 8 A.M., pulse 124, temperature 101.4°; no pain, and patient quiet; wound discharged a small quantity of foul-smelling pus; a number of stitches were removed, and an extensive infection of the cellular tissue was found; a pure culture of the bacillus coli communis was obtained from the pus, which accounted for the odor; he was quite restless during the day, with involuntary urination; slept at intervals; stools watery and brown; 8 P.M., pulse 120, temperature 101.4°. May 27: 8 A.M., pulse 124, temperature 100°, patient resting quietly, slight delirium during the day, perspiration very free, and great thirst; 8 P.M., pulse 100, temperature 99.6°, patient resting well. May 28: 8 A.M., pulse 98, temperature normal; 8 P.M., pulse and temperature same as morning, had been delirious at times during

the day. May 29: 9 A.M., pulse 92, temperature 98.6°, patient feeling quite comfortable, some pain in the wound; 8 P.M., pulse 88, temperature 98.6°, very comfortable. May 30: 9 A.M., pulse 92, temperature 98.6°, resting well; 9 P.M., pulse 68, temperature 98°, resting comfortably.

From this date on patient continued to have practically normal temperature and pulse, resting quite comfortably most of the time. Wound continued to discharge, and the edges of the skin and muscles separated considerably owing to the bacillus coli communis infection of the cellular tissue. We have observed that infections with this organism produce rapid destruction of the fatty tissues, and that the best means of controlling them is with a saturated solution of bicarbonate of sodium.

The foul-smelling purulent discharge, which was abundant at first, rapidly decreased in quantity, and by June 7 had lost its odor. The wound gradually closed, and the discharge had practically ceased by June 14. On June 15 the patient developed a localized broncho-pneumonia and pleurisy on the right side, which gave rise to considerable pain, and his temperature rose to 101.2° F. This had subsided by June 20. On July 8 he had another attack of the same trouble, temperature rising to 102° on the 9th, gradually subsiding to normal on the 19th. No tubercle bacilli were found in the sputum.

July 24, patient was discharged with the wound entirely healed and feeling well. Subsequent reports showed that he progressed to complete recovery.

The following is a synopsis of the cases which we have collected. It includes all of the cases in the literature from the time of Weir's publication, May, 1900, to July 1, 1902:

CASE I.—Carter, Bolton.[11] Female, aged 20 years. Admitted to Royal Halifax Infirmary October 29, 1900. Patient presented a large, fluctuating mass in the right iliac region. Temperature 101.6° F. Appendicial abscess diagnosed. Operation: oblique incision internal to right anterior superior spine. Large quantity of fetid pus evacuated. Abscess cavity walled off from peritoneal cavity by adhesions. Appendix not found. Cavity flushed out. Rubber drainage tube inserted. Patient improved until November 8. On the 9th blood escaped from the wound; the patient complained of severe pain over abdomen and began to vomit. Pulse reached 120 and she became collapsed. Died of general peritonitis November 10. Necropsy: general septic peritonitis; appendix sloughing, but no pus in neighborhood;

blood clot in right lumbar region, which came from a perforating ulcer in anterior wall of second portion of duodenum. In this case there was no history of previous gastric trouble.

CASE II.—Clarke and Franklin.[7] Male, aged 45 years. Admitted to Leicester Infirmary November 7, 1900. Patient had passed no urine for six days. Complained of pain in right lumbar region. On third day kidney was explored, but no stone found. Recovered from urinary suppression. Discharged January 1, 1901, well. Readmitted June 1, under Mr. Franklin. Eight days before he was suddenly seized with acute pain in abdomen, and confined to bed since. No vomiting. Some diarrhea and abdominal distention. On admission, expression anxious and eyes sunken. Pulse 130 and small. Temperature normal. Abdomen distended, but not tender. No liver dulness present, and no dulness in flank; tympany all over. General peritonitis diagnosed, and abdomen opened in median line midway between pubes and ensiform. Abdominal cavity full of fecal-smelling pus. Incision extended downward and inflamed appendix removed. Peritoneal cavity flushed out and wound closed with drainage. Patient died five hours after the operation. Necropsy: large perforating ulcer on anterior wall of first part of duodenum. Two other large non-perforating ulcers present, one opposite the perforation, involving all coats except the serous; the other a little lower down, extending through the mucous coat only. Two small superficial ulcers in stomach.

CASE III.—Fairchild, D. S.[16] Female, 50 years of age. Patient had been ill three weeks with apparently increasing obstruction of the colon near the sigmoid. Had been in poor health for several years. Operation January, 1901: incision to the left of the umbilicus. Intestinal contents were seen escaping from beneath the transverse colon. Three perforations in the duodenum were found and sutured. Abdomen irrigated and closed with drainage. Patient died four hours later.

CASE IV.—Blum, reported by Grivot and Aguinet.[17] Male, aged 31 years. Vomiting began October 13, 1900, and this increased during the 14th and 15th. On the afternoon of the 16th patient suffered severely from pain in right hypochondriac region. The vomiting persisted, and he entered the hospital October 18. He had had no movement of the bowels for two days. Examination showed tympanites; diffuse tenderness over the abdomen, more pronounced in the right hypochondriac region, in which neighborhood there was a well-marked dulness

on percussion. Temperature 37° C., pulse 120. Intestinal perforation, probably of appendicial origin, was diagnosed. Operation performed by Dr. Blum. Incision same as for appendicitis; foul fluid removed from peritoneal cavity. Appendix removed. Pain disappeared after the operation, and condition temporarily improved. He soon grew rapidly worse, and died October 27. Necropsy: an abscess cavity was situated on the under surface of the liver and lined with false membrane. A brownish liquid escaped from the duodenal region. On the anterior surface of the first portion of the duodenum, about ten centimetres from the pylorus, a circular perforation was found, about one centimetre in diameter. It was evidently an old cicatrized ulcer which had ruptured during an effort at vomiting.

CASE V.—Kinnicutt, F. P. Male, aged 40 years. Admitted to hospital January 10, 1899. Patient had been drinking to excess for three days previously and had been suffering from loss of appetite, nausea, and vomiting. Had had constant epigastric pain and bowels had been constipated. Examination showed a prominence of the right epigastric region, where a mass could be felt, tender to pressure. Temperature ranged from 99.2° to 102° F. Mass increased in size, and three days after admission patient vomited blood. After several hours abdomen was opened. Stomach and liver adherent. Stomach full of blood, as was also the lesser peritoneal cavity. Circular ulcer two inches in diameter had perforated the peritoneum in the posterior wall of the duodenum, just below the pyloric ring. Patient's condition was such that it was impossible to proceed, and he died a few moments later.

CASE VI.—Labbé, Marcel.[18] Male, aged 31 years. Had been in good health, with no previous symptoms of hepatic or intestinal trouble. Was taken suddenly with severe abdominal pains one morning after breakfast. After admission to hospital pain became somewhat less severe and the next day was localized in the right side of the abdomen, with maximum intensity in the right iliac fossa. Pain soon increased; abdominal muscles became tense; there was absolute constipation; no vomiting and no fever. The diagnosis was between appendicitis and hepatic colic. On the third day condition became worse, pulse small and rapid, temperature 39° C. Tympanites became extreme, and fecaloid vomiting set in. Operation showed general peritonitis, with pus in the peritoneal cavity. Drainage established, the wound closed. Death took place that evening. Necropsy:

under the right side of the diaphragm was a localized abscess containing pus, gas, and fecal matter, and lined by a false membrane. Close to the entrance of the bile duct in the duodenum was an oval-shaped perforation one-half centimetre in diameter. This perforation connected the interior of the abscess cavity with the duodenum. In the duodenum itself an old ulcer was found on the lower portion of the anterior surface.

CASES VII., VIII., and IX.—Littlewood, H.[19] In the transactions of the Leeds and West Riding Medico-Chirurgical Society, May 3, 1901, Mr. H. Littlewood states that he operated on three cases of acute perforating duodenal ulcer. All were in men, and the operations took place after thirty-six hours from the time of perforation. All died.

CASE X.—Lowson, D.[20] Girl, aged 15 years. Illness began previous February with pains in the left side. Two weeks later had rigors, with depression and cyanosis. March 17, suffered profound collapse, with severe pain to the left of navel, pallor and cold sweats. March 20, began to vomit, but this ceased on the 25th, when the temperature went up and pulse increased in rapidity. April 4, the respirations were shallow, abdomen was distended, and there was a localized swelling just below the liver. The next day the swelling had disappeared and the note was tympanitic. Operation: vertical incision through the rectus muscle showed gas in the peritoneal cavity, with shreds of food. The odor was putrid. The abscess cavity was formed by adherent intestines. A perforation which admitted a No. 6 catheter was found in the duodenum. The granulations were scraped away and the opening closed with Lembert sutures of silk. Gauze drainage was left in the wound. The ultimate result in this case is not stated in the report.

CASE XI.—Mauclaire.[21] Male, age not stated. Had had pain between the margin of the ribs on the right side and the umbilicus, and later all over the abdomen. Pains came on suddenly and were very severe. Patient was seen thirty-six hours after the onset, when the vomiting had ceased; temperature was normal, and his general condition grave. Abdomen was tympanitic. A diagnosis of intestinal perforation was made and laparatomy at once performed. Death occurred sixteen hours later, or fifty-five hours after the onset of the attack. Autopsy showed general, plastic peritonitis following the perforation of an ulcer of the duodenum two centimetres below the pylorus.

CASE XII.—Moynihan.[4] Male, aged 44 years. Admitted to

Leeds Infirmary April 24, 1900. Symptoms had been present for eighteen months, chiefly pain after taking food; vomiting of blood, which occurred irregularly one-half to four hours after eating. On the 25th patient became worse and the symptoms of peritonitis developed. Perforation was diagnosed and laparatomy performed. A perforating duodenal ulcer three-quarters of an inch in diameter was found in the beginning of the second portion. The sutures were introduced, held imperfectly, and, as the gut was considerably narrowed, gastroenterostomy with Murphy button was performed. Abdomen was cleansed and drainage tube introduced. Patient died May 22.

CASE XIII.—Moynihan. Male, aged 25 years. Admitted to Leeds Infirmary June 18, 1901. For four weeks had experienced pain after taking food, and had vomited almost at once after meals. Had sudden, acute pain in the upper part of the abdomen, in the median line; profound collapse and persistent vomiting. The abdomen was opened three hours and fifty minutes after perforation. Some gas in peritoneal cavity was found. On examining the duodenum a perforation in the anterior wall, one inch below the pylorus, was found. The opening was stitched with a continuous suture applied vertically, the abdomen was flushed out, and a drainage tube inserted into the pelvis. No fluid was allowed by mouth for twenty-four hours, and saline enemata were given every six hours. Drainage tube taken out in thirty-six hours and patient allowed to sit up on the nineteenth day. Recovery was uneventful.

CASE XIV.—Moynihan. Female, aged 29 years. Admitted to Leeds Infirmary September 29, 1900. Had several acute attacks of pain and vomiting during last five years. There was blood in the vomitus the first time, and has been irregularly since then. Always experienced a sense of discomfort from one to four hours after meals. October 4, had one of these attacks, with temperature 104° F., vomiting, tenderness in right hypochondrium, and severe pain on the right of the umbilicus. October 12, laparatomy performed and many adhesions found around the duodenum, pylorus, and gall bladder. An abscess was found between the liver and the duodenum; the duodenal wall was thickened and presented a perforating ulcer at the junction of the first and second portions. Tube and gauze drainage were inserted, and the patient left the hospital November 5 with the wound entirely healed.

CASE XV.—Murphy, J. B. History of case given previously.

CASE XVI.—Pegram, J. C.[22] Male, aged 56 years; farmer. Ten years ago had stomach trouble for two years, but since then had been well. December 8, 1899, patient ate a hearty meal in the evening, and that night had dull, unlocalized pain in the abdomen. At 10 the next forenoon had violent pain in the right side of the abdomen and the bowels had not moved. Examination showed flat, rigid abdomen, with marked tenderness, especially in the right hypochondrium. Abdomen became distended, and he vomited frequently. Operation disclosed perforating ulcer in the anterior wall of the duodenum near the pylorus, with subphrenic abscess. Abscess was evacuated. No attempt was made to close the ulcer, but it was walled off with gauze. Patient died thirty-six hours later with general peritonitis.

CASE XVII.—Vince.[23] Female. Presented every symptom of intestinal obstruction. All medication being useless, an operation was performed. Upon opening the abdominal cavity gas escaped and the intestines were found to be covered with purulent, fibrinous exudate. There was no fecal matter in the peritoneal cavity. Drainage was introduced through a lumbar incision and through the cul-de-sac of Douglas. Patient died. Necropsy showed a localized abscess in a space limited by the liver, stomach, diaphragm, and transverse colon. This cavity contained the contents of the duodenum, which had escaped through the perforation in the anterior wall. The perforating ulcer was evidently a chronic one, as the edges were indurated.

CASE XVIII.—Vince.[24] Male, age not given. After lifting a heavy log, was taken with severe, acute pain in the abdomen. Upon examining the abdomen, liver dulness was found to be obliterated, and there were all the evidences of ascites. A diagnosis of intestinal perforation was made, and patient was taken to hospital and operated upon within twenty-four hours from the onset. Gas escaped from the abdominal incision, and bile flowed out. A perforation was found in the duodenum at the site of an old ulceration, about which there were numerous peritoneal adhesions. The violent effort of the patient had evidently caused the ulcer to perforate. Patient died the evening after the operation.

CASE XIX.—Wilson, A. Christy.[25] Male, aged 48 years. For several years had been troubled with indigestion. While employed at his usual labor one morning, was suddenly seized with severe pain in the epigastrium. He had all the symptoms of

perforation, but refused operation until twenty hours after the onset. At that time a median incision was made, and upon opening the peritoneum a quantity of bile-stained mucus escaped. Perforation was found in the anterior wall of the duodenum one inch below the pylorus. This was closed with a double row of sutures, after which the intestines were drawn out, scrubbed, and put back. The liver, stomach, and pelvis were also cleansed thoroughly, normal saline solution being used freely. Recovery was slow but steady, and the patient is at present employed at his regular hard work.

An analysis of these cases shows: Average age in the 13 cases in which age was stated, 35 years. Of the 19 cases, 5 were females and 14 males. Of the 12 cases in which it was stated whether or not there were symptoms present previous to the perforation, in 9 cases there were symptoms (previous); in 3 cases there were no previous symptoms; in only 5 cases did the symptoms point to the stomach or duodenum; in 6 cases it was stated that the perforations were sutured—of these, 2 died, 3 recovered, in 1 the result is not stated; in 8 cases, drainage only was used—of these, 7 died and 1 recovered.

CONCLUSIONS.—The diagnosis of perforating duodenal ulcer is difficult, or, better, practically impossible without an exploratory laparatomy.

In many cases there is no evidence of duodenal disease previous to the perforation. The most important physical sign, in addition to those of perforative peritonitis from perforations in other portions of the intestinal tract, is the flatness of the superficial piano percussion note in the right hypochondrium.

The leucocytosis in our case, the only one in which it was given, was pronounced, showing an inflammatory condition, in contradistinction to the usual absence of it in intestinal obstruction and fat necrosis of the pancreas. It must be borne in mind, however, that leucocytosis is not a necessary manifestation of perforation or of inflammation. It is a manifestation of the reaction of blood to infections biotic or toxic. It is often entirely absent in typhoid perforations, as we have observed in repeated blood examinations after perforation during the present epidemic in Chicago.

Collapse is absent in duodenal perforation, except where associated with severe hemorrhage. Collapse in intestinal perforation is the *manifestation of the absorption of the products of infection*, and not a manifestation of the perforation *per se*.

Collapse is always secondary to abrasion or denudation of the endothelial covering of the peritoneum, which abrasion permits of rapid absorption.

Time of Operation.—In all cases of perforative peritonitis—to which duodenal perforations are no exception—operation should be performed at the earliest possible moment after perforation has taken place; and clinical experience shows that the mortality is in direct ratio to the length of time that elapses between the occurrence of perforation and the operation.

In perforation, the longer the escaping material is in contact with the peritoneum the greater the danger of destruction of its endothelial covering, and thus the greater the danger of absorption. Of 13 cases operated more than thirty hours after perforation, all terminated fatally; while in 12 cases where less than thirty hours had elapsed, 66⅔ per cent recovered (Weir). These comparisons emphasize more than words can the importance of early operation.

The operation must be complete—that is, it must be pursued to an effective suture of the perforation. Drainage is insufficient, as of 18 cases treated by drainage alone, all died (Laspèyres). The suture of the opening can be easily inserted, as in 98 per cent of the perforating ulcers into the peritoneum the opening was in the first portion of the duodenum, its most accessible portion.

Where duodenal perforation is suspected the incision should be through the right rectus muscle. It can then be carried upward to the costal arch, or downward to the symphysis pubis, without dividing any of the transverse muscles. The incision through the rectus muscle is the one which we commonly make in operating for appendicitis. It can be enlarged upward or downward without interfering with the muscle fibres.

Drainage or no drainage is a matter of personal election, influenced more or less by the pathologic condition present at the time of the operation.

The after-treatment is that commonly followed after abdominal section, except that the patient is kept elevated in bed at an angle of 35 degrees for the first forty-eight hours after the operation.

The prognosis depends: first, on the virulence of the peritonitis produced; second, on the time the material has been allowed to remain in the peritoneum; third, upon the presence or absence of blistering or abrasion of the peritoneum at the time of operation.

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DISCUSSION.

DR. W. D. PORTER, of Cincinnati.—I wish Dr. Murphy, in closing the discussion, would give us some information in regard to one or two points. He spoke of hemorrhage which occurs in the intestinal canal, and the direction it takes, but he said nothing about hemorrhage into the peritoneal cavity. He mentioned the difficulty of determining the site of the perforation. I was particularly impressed with the allusion to the ease with which the finger can detect an exudate in the peritoneal cavity.

In appendicitis one of the classical symptoms is rigidity of the abdominal muscles. This has always seemed to me irrational. The analogy between rigidity there and rigidity of the muscles in the control of the movements of joints is not clear to me. In the latter condition the relations are such that we can readily see why a reflex produces such a rigidity. Within the abdominal cavity rigidity of the abdominal muscles would produce pressure. I have never noticed in operating through the abdominal muscles any evidence of rigidity. I would like to ask Dr. Murphy if he does not think this rigidity of the abdominal muscles is due to the exudate under the abdominal wall; that it gives the physical signs of rigidity without the actual presence of rigidity.

DR. L. H. DUNNING, of Indianapolis.—This is quite a new subject and one in which we should all be greatly interested. Several questions suggest themselves as important and on which I would like some enlightenment. One is with reference to the history of the cases. Did the ulcer occur in such a manner that fluid found its way into the lesser peritoneal cavity and did not enter the general peritoneal cavity? In the anatomy of the duodenum and the distribution of peritoneum it will be recalled that, in a rupture occurring near the receptaculum of Vater, the contents of the duodenum might be emptied into the lesser peritoneal sac instead of into the general peritoneal cavity.

I was greatly pleased with the remarks of the essayist relating to the influence of time in operating. Every community ought to be educated in reference to perforative diseases of the intestinal tract, especially cases of obstruction of the bowels, whether there is perforation or not. I have done a good many operations for intestinal obstruction, and never saw a patient recover who was operated upon three days after the occurrence of the perforation, or after a like number of days subsequent to the onset of stercoraceous vomiting; hence it is very essential that we should emphasize this on every occasion, because we must regard all cases of genuine intestinal obstruction as almost hopeless after three days. I presume this is a strong statement to make, and some of you may cite cases that have recovered later than that, but I have never seen one.

I am very glad that the members of this association have done not a little in clearing up the mysteries surrounding pathological lesions of the abdominal cavity, and I feel grateful to Dr. Murphy for having presented this paper.

DR. M. STAMM, of Fremont, Ohio.—In perforation from gastric ulcers attention is called to the absence of liver dulness. I would like to ask Dr. Murphy whether, in his operations for duodenal ulcer, he has observed that the same fact holds good.

DR. MILES F. PORTER, of Fort Wayne.—I am constrained to believe that the difference in the results between those cases that were operated upon and drained, without closure of the perforation, and those cases in which the perforation was closed, is not to be accounted for entirely on the ground of the difference in the technique of closure and non-closure. It is likely that in these cases the perforations were not closed for the reason that it was not good surgery to do it. It has occurred to me that many of these cases were finished without closure of the perforation because at the time of the operation the patient was in an extremely dangerous condition. I desire to acknowledge my obligations to Dr. Murphy for the presentation of this admirable paper.

DR. EDWIN RICKETTS, of Cincinnati.—I wish to call attention to one statement, namely, the reference to peritoneal exudates. I will ask Dr. Murphy to consider that feature of the discussion with reference to the use of gloves. Can these peritoneal exudates be detected as well with the gloved as with the bare hand?

DR. MURPHY (closing the discussion).—In the beginning I beg to thank the gentlemen for their commendatory remarks. In answer to the first question I will say that hemorrhage into the peritoneal cavity is rare. While hemorrhage was frequently a symptom in about 36 per cent of the cases of duodenal ulcer, it was manifested either through the bowel or through the stomach. This has no reference to the cases of perforation. It is an aid in diagnosis before perforation occurs, rendering easier the differential diagnosis.

I was very glad to hear Dr. Porter refer to rigidity of the abdominal muscles. This rigidity seems to serve two particular purposes: first, to prevent movement of the intestines; and, second, to protect them from deviations of pressure. This does not mean inward pressure. All of you know that if you apply deep pressure upon the abdomen in a case of peritonitis, and then remove your hand suddenly, the patient will experience more pain than when the hand is first pressed inward. I do not recall the report of a single case in which the peritonitis was limited absolutely to the lesser peritoneal cavity. In a number of cases perforation occurred in the portions of the duodenum that were extraperitoneal, that is, into the so-called meso-duodenum, in the portions that are covered by the colon, in the part behind the peritoneum, and in the mesentery of the duodenum where the bile duct and pancreatic head are situated.

With reference to intestinal obstruction, I think Dr. Dunning's question is pertinent. Intestinal *strangulations* of long duration, as a rule, are fatal. Intestinal obturations, that is, where there is merely an obstruction to the passage of the contents of the bowel for days, are not so dangerous, because the bowel empties backward through the stomach, and sooner or later the obturation may give way and permit the re-establishment of the fecal current. But this is not the case in intestinal strangulation. There is something about the depression and intoxication in intestinal strangulation which differs from that of intestinal obturation. Where a portion of the bowel is strangulated, we get a pronounced depression; but where there is merely an obstruction from the gradual closure of a circular band or from a neoplasm, the patient may go for days (eight to ten) without a bowel movement, and still have no pronounced depression. I recall one case that went nine days without a bowel movement and there was no shock. That was merely a coprostasis without strangulation. In further reference to the remarks of Dr. Dunning, I dislike very much to operate on any case of intestinal obstruction after three days.

As to the use of gloves, I have had no experience.. I never use them in my work, and can see no need for them.

REPORT OF A NUMBER OF CASES OF OPERATION FOR PERITONEAL TUBERCULOSIS, WITH REMARKS.

By RUFUS B. HALL, M.D.,
CINCINNATI.

In presenting this short report it is not the intention of the writer to enter into a discussion of the etiology or pathology of tuberculosis as it invades the various regions of the human body, but rather to confine his remarks to clinical phases of the disease as it invades the peritoneum, especially in the female.

Peritoneal tuberculosis in women is not a rare disease. It occurs often enough to make it necessary to consider it in the diagnosis of all obscure diseases in the pelvis and abdomen. In a large majority of the cases of peritoneal tuberculosis coming under the writer's observation there were no appreciable manifestations of the disease in other parts of the body. In a few cases there were unmistakable symptoms of the disease either in the lungs or other parts of the body, as enlarged glands in various regions or necrosis of bone. The symptoms of the disease vary so much in different cases that many other diseases in the abdomen or pelvis may be simulated so accurately by tuberculosis that it requires patient and careful study in each case to differentiate one from the other.

A very perplexing condition which is often met is tuberculosis with agglutination of the intestines, due to the localized inflammation, forming a distinct mass in the region of the appendix. These patients have repeated attacks of inflammation so closely resembling the recurrent attack of catarrhal appendicitis that a correct diagnosis is next to impossible before the abdomen is opened. The writer has operated a number of times for relief of recurrent attacks of appendicitis, the attacks recurring at irregular intervals of from three to six months, confining the patient to bed for from ten to twenty days at each attack. The patients all have a temperature of from 101° to

102½° for a day or two at the commencement of the attack, and a distinct tumor in the region of the appendix, which disappears in three or four weeks. One may suspect tuberculosis, but in the absence of any of the usual symptoms of that disease in other parts of the body he cannot always confirm his suspicion until after the abdomen has been opened.

The following case will serve as an illustration of this group: Miss N., aged 27, a highly-educated and refined woman, had been the subject of recurrent attacks of appendicitis for three years, during which time she had suffered from five severe attacks, each attack confining her to bed for a period varying from ten days to three weeks. After each illness there remained a distinct mass in the region of the appendix for from ten to twenty days, and the soreness remained for several weeks. At the time of the operation, which was made in the interval, a small, distinct, hard mass, which appeared as large as a man's thumb and two inches long, could be felt in the region of the appendix. There were no symptoms nor manifestations of tuberculosis in any part of the body, but his past experience made the writer suspect tuberculosis as the cause. The operation revealed the most extensive ravages of tuberculosis. The appendix was enlarged and thickened, with no accumulation in it, yet the removal of the appendix cured the attacks. The patient recovered, has since married, and is enjoying most excellent health.

Peritoneal tuberculosis often resembles a small fibroid of the uterus associated with tubo-ovarian disease. In both conditions the patients have the excessive loss of blood at the menstrual periods, which are prolonged and more frequent and are accompanied by the pain which is so frequent in fibroids. They also have recurrent attacks of inflammation at irregular intervals, just as the patients do who have fibroid tumors with tubo-ovarian disease.

An illustrative case is Mrs. H., aged 36, mother of three children, the youngest 10 years old. She has been a widow eight years. She entered my service at the Presbyterian Hospital October 10, 1898. She has always worked hard and enjoyed good health until five months ago. Since that time the menstrual periods have been very excessive, amounting almost to a hemorrhage, and accompanied by a good deal of pain. On two occasions at her periods she was obliged to call a physician and remain in bed for three days on account of pain in the abdomen. When she entered the hospital she had been bleeding for ten

days. She had the appearance of a strong and vigorous woman. Vaginal examination revealed the pelvic cavity filled with a mass extending for three inches above the pubic arch. The whole mass was not unlike a small fibroid of the uterus with old tubal disease passing through an acute attack of inflammation. The patient was kept under observation for a week, with quiet in bed, and there was a change for the better in the local condition. The tumor was not so large. The bleeding stopped. By vaginal examination a distinct mass, separate from the uterus, could be made out to one side of the pelvis. The upper border of the mass could not be clearly defined, as is usual in a small fibroid tumor. A positive diagnosis was not made, but an operation was advised and accepted. When the abdomen was opened the disease proved to be tubercular, with a large abscess at the side of the pelvis involving the tube, which was removed. The patient recovered.

There are cases of encysted dropsy, due to peritoneal tuberculosis, in which the most careful examination may fail to reveal the true condition. The following case illustrates this point: Mrs. H., aged 30, mother of two children, the younger 2 years old, had always enjoyed unusually good health previous to the present illness. The patient was in her usual flesh, felt perfectly well, and had the appearance of a strong, vigorous woman. She never required the attention of a physician except in her confinements, which were normal. Seven weeks before the operation she consulted her physician, complaining of pain in the lower part of the abdomen, which disappeared in a day or two. An examination at that time revealed an enlargement in the pelvis and abdomen as large as a cocoanut, which was supposed to be ovarian. Upon close questioning the patient admitted that she had observed some vague discomfort in the pelvis and abdomen for five or six weeks. She was informed that she had a tumor and it should be removed early. She went to visit a friend in the country, and four weeks later had a sharp attack of pain in the abdomen and was confined to her bed three or four days. After that time the abdomen remained sore and tender to the touch. It enlarged rapidly up to the time she entered the hospital, seven weeks after her first knowledge of the disease. At that time the abdomen was as large as at full term of gestation. The physical examination and clinical history simulated ovarian cyst so perfectly that one might easily have made an error and pronounced it ovarian. But by careful

examination the upper boundary of the supposed tumor could not be accurately defined, as it always can be in ovarian cyst. The condition was such as always exists in encysted dropsy due to tuberculosis. By vaginal examination the uterus was found to be fixed, and there was marked tenderness with distinct hardness upon both sides of the uterus—very unusual in ovarian cysts and quite the rule in encysted dropsy. The general appearance of the patient was that of a strong, robust woman, except the abdominal enlargement. Operation was advised and made.

When the abdomen was opened fully two gallons of encysted fluid were evacuated, revealing very extensive ravages of tuberculosis. The pelvis was filled by the enlarged uterus and diseased tubes, which were apparently the focus of infection. Both tubes were the seat of large abscesses, and were removed. After cleansing the cavity a drainage tube was placed and the patient put to bed. She had a slow and tedious convalescence, but recovered and is enjoying excellent health at this time, five years after the operation.

While there are many conditions in the pelvis and abdomen, due to other causes, which are very difficult to differentiate from tuberculosis, the diagnosis of that disease is not impossible in most instances. There may be nothing in the appearance of the patient, the clinical history, or the pelvic or abdominal conditions to even suggest the tubercular condition. But by a little patient, careful observation we may, if the case is one of tuberculosis, set the whole matter at rest or make a provisional diagnosis of tuberculosis by the temperature chart. The temperature should be registered every three or four hours for ten or fifteen days. In no other condition do we have the exact regularity of afternoon rise of temperature as in this disease.

That certain phases of peritoneal tuberculosis call for surgical interference there can be no doubt. In all cases where there is an encysted dropsy or an accumulation of pus, the abdomen should be opened, the fluid or pus evacuated, and, after the necessary surgical repair has been completed, free drainage should be established. The experience of surgeons in this class of cases is that the remote results are exceedingly gratifying. The writer has made abdominal sections for the relief of tubercular conditions upon 110 patients: for appendicitis, male 4 times, female 8 times—12 times; other conditions (female), 98 times; total sections, 110.

CASE I.—One patient died apparently from shock the day of the operation.

CASE II.—One patient died from septic peritonitis the third day after operation.

CASE III.—One patient died of meningitis on the seventeenth day after the operation. For fifteen days this patient's convalescence was perfectly satisfactory in every way. She was a girl 11 years of age. On the morning of the sixteenth day she complained of pain in the head and in one hour was delirious.

CASE IV.—One patient died of general dissemination while yet in the hospital, six weeks after operation.

CASE V.—One patient died of general dissemination while yet in the hospital, ten weeks after the operation.

CASE VI.—One patient, a woman aged 26, made an easy and smooth convalescence and left the hospital at the end of the fourth week. She was able to go out for a drive on two or three occasions. She died of meningitis at the end of the sixth week, after a three days' illness, two weeks after she left the hospital.

CASE VII.—One patient recovered and left the hospital at the middle of the fourth week, and died of general dissemination thirteen weeks after the operation. This patient was a man, operated for appendicitis. He had suffered from several attacks extending over a year or more. There was a distinct lump in the region of the appendix, and he was operated on in the interval. The appendix did not contain any foreign body, yet it was removed after great difficulty in separating the adhesions.

Early in my work in peritoneal surgery a number of cases were operated upon for tuberculosis in which no fluid, either serum or pus, was evacuated. If a diagnosis of tuberculosis could be made, the dictum of the day was to operate. If no diagnosis could be made, the dictum was to explore for a diagnosis. The writer has long since abandoned both of these dicta. He has not made an exploration for diagnostic purposes for years. Neither has he knowingly operated for eight years for peritoneal tuberculosis where fluid was not believed to be present.

In studying these cases and following the after-results, the writer has been very forcibly impressed by the fact that in the cases operated in which there was fluid to be evacuated, either pus or serum, the ultimate results were very much more favorable than in those cases in which the enlarged mass proved to be an agglutination of the abdominal viscera and where no focus of

infection was removed or fluid was evacuated. The first class of cases, which were by far the largest majority, were greatly relieved at once following the operation. Convalescence was established early, and as a rule the cases made satisfactory progress. In the latter cases the operation did not seem to have exerted the marked beneficial results noted in the former. They did not regain their strength so rapidly, convalescence was more prolonged, and other manifestations of the disease were more likely to be noted within a year. This group comprises 11 cases of the 110 referred to in this paper. Of these 11, one died the third day following the operation (Case 2), previously referred to. Of the remaining 10, 6 have died of tuberculosis in from fourteen months to three years after the operation, and 4 are now apparently well, without any other manifestation of the disease. Of the remaining 94 cases, one died three and a half years after her operation, from tuberculosis of the lungs. This case remained apparently well two and a half years after operation. One case died four and a half years after her operation, from laryngeal tuberculosis, after an illness extending over nearly three years. Two cases are now suffering from advanced pulmonary tuberculosis and will probably die within a year. The remaining 90 are symptomatically well. A few of these cases have been operated so recently that no conclusions can be drawn from them.

Taking these cases as a whole, the results are certainly gratifying beyond expectation. A large per cent of the cases are enjoying the best of health, and from their appearance one would never suspect that they have had tubercular disease.

The only complication to mar the otherwise most gratifying convalescence in not a few of the cases was the persistence of the fistulous opening at the site of the abdominal drainage. For several years the silk used for ligatures was given all the blame for the persistence of the fistulæ, some of which remained for a year or more. Finally catgut was substituted in all cases, but the fistulæ came just as often and remained just as long. It is not the fistula itself that is the greatest objection to its presence or long continuance, notwithstanding the great annoyance and, at times, pain to the patient, but the ventral hernia that always follows in cases in which a sinus remains for a long period of time. We will not discuss its treatment nor dilate upon its danger. You are all familiar with them. I would rather suggest a method to avoid the fistula and the subsequent hernia. In all cases in

which the subject is a female this is avoided by substituting vaginal for the abdominal drainage. The writer has used it in sixteen cases, and his experience has been most gratifying.

DISCUSSION.

DR. JOHN B. MURPHY, of Chicago.—I wish to congratulate Dr. Hall, first, on his extensive experience in peritoneal tuberculosis, and, second, on his good results. His paper is a valuable one and his results are excellent. One hundred and ten cases is an enormous number in one man's experience, and because he followed a definite line of treatment his experience is of more value than if he had included an equal number of cases treated by ten different men on different lines or methods.

As to the results in the treatment of tubercular peritonitis of the cobweb type, which is between the serous and the organic adhesive types of peritonitis, they have been moderately good—that is to say, in those cases in which the peritoneum is practically obliterated, because upon a peritoneum bound by organic adhesions the operation has no effect; but in the peritoneum with a purulent accumulation my results have not been satisfactory. Operation has done little if any good for them. In the cobweb type my results have been satisfactory, notwithstanding the objections to operation in that class of cases. In the seropurulent type my results have likewise been extremely gratifying.

How often did Dr. Hall find the tubes involved in cases of tuberculosis of the female peritoneum? With one single exception, I have never seen a case of tubercular peritonitis in the female without involvement of the tubes, and that has led me to ask some questions: the first and most pertinent is, Does peritonitis occur from tubercular tubal disease frequently, or at all, or is the tubal disease a sequence of the peritonitis? Have we a tuberculosis of the mucosa of the tube as the result of the tube taking up the tubercular material from the peritoneum and endeavoring to eliminate it through the tube and uterus to the vagina; or have we tuberculosis of the peritoneum from an escape of the bacilli from the tuberculous tube at its end? I am very anxious to learn about the frequency of involvement of the tubes in connection with tubercular peritonitis, and I propound these questions because Dr. Hall's experience is more extensive than mine.

Another point in connection with the symptomatology and the differential diagnosis: from Dr. Hall's remarks it would seem that it was difficult to make a differential diagnosis between peritoneal tuberculosis and appendicitis. That is true. It is difficult, and the only real assistance I succeeded in getting was from two things, namely, examination of the pelvic organs through the rectum rather than through the vagina, because tuberculous cases occur in children, nulliparæ, and virgins, and an examina-

tion through the vagina is difficult or impossible, while a rectal examination would reveal induration and thickening of the lower portion of the cul-de-sac of Douglas or the tubes.

Another point in the clinical history of the disease in the virgin is a purulent discharge from the vagina and an erosion of the cervix. In girls from 10 to 16, and from those ages upward, some have succeeded in finding tubercle bacilli in the vaginal discharge. With occlusion of the tube it would be exceptional to have the bacilli transmitted. Again, we have another symptom in this class of cases, namely, profuse menstruation in anemic girls in connection with peritonitis associated with tuberculosis of the tubes.

Still again, where I have found the tube sealed there has been an absence of periodicity in the attacks. I have found the tubes sealed in every case of mixed infection. I never found an open tube communicating with the pus of the peritoneum. That is an important element. Just as soon as a mixed infection of the tube appears the fimbriated end becomes adherent to the ovary, intestine, or peritoneum. Whenever there is a simple tubercular infection of the tube, there is always an ectropium of the fimbria, and it holds its mouth open like a sucker-fish. In this class of cases we have the periodic attacks. I have attributed these attacks in tuberculosis of the tubes to the fact that there is periodically expelled from the tube débris from the eruption of the tubercles; sufficient tubercular material is carried into the peritoneal cavity to cause manifestations of accumulation, increase of fluid, and acute inflammatory reaction.

With reference to drainage and hernia: like Dr. Hall in his cases, in the beginning I drained, but now I do not. I have adopted the rule in tuberculosis, no matter where it is situated, to avoid drainage. If I open a psoas abscess, I do not drain. Drainage, whenever it is resorted to, is never more than temporary, usually for twenty-four, not longer than forty-eight hours. I would ask Dr. Hall if, in his recent cases, he resorted to primary closure, to kindly give us a report of his results.

Dr. J. H. Carstens, of Detroit.—This is certainly an excellent paper, such as Dr. Hall usually presents. The experience, too, of Dr. Murphy is so large in these cases that none of us approach it. A few cases coming under the observation of this or that man do not count for much.

I was very glad Dr. Murphy made a point with reference to drainage. In these cases very often, after they have existed a long time, we find secondary deposits in the lungs. I let such conditions alone. I do not operate on them because I find invariably they die of general tuberculosis. I make it a rule that I will operate if there is no secondary deposit in the lungs. The operation depends largely upon where the focus of disease seems to be. If it is around the appendix I invariably remove the appendix. If, however, the focus of disease is confined to the tubes, I would not remove the tubes, but only extirpate them when they

are occluded and contain pus, as in such a case there is a septic condition, probably from a mixed infection.

If the tubes are open and studded with tubercles in the mucosa as well as on the peritoneal surface, I never remove them; I let them alone, because if nature takes care of tubercles studded all over the peritoneum she will also take care of tubercles that are in the tubes, including the mucosa. I have seen tubercles in the omentum, as large as my fist, that, after opening the abdomen absorb or disappear. If nature can take care of all these tubercles in the omentum, she can likewise take care of tubercles in the tube and around the ovary; and there is no reason why I should remove the tubes or ovaries in a young girl and thus unsex her, particularly when I know the tubercles will be absorbed and the girl will be perfectly well and not be unsexed. I think the removal of the tubes simply because they are the site of tubercular disease is a mistake, especially in women who are still sexually active. In an older person it is a different proposition.

The other point I desire to speak of pertains to drainage. I think Dr. Hall makes a mistake in draining so much. I drain sometimes. If I make a diagnosis and there is not too much deposit in the cul-de-sac of Douglas, I open into it behind, wash out the peritoneum and put in a rubber drain, to remain a few days, after which it is removed. On the other hand, if I have a case of tubercular appendicitis, I remove the appendix and close the incision. If I have a general tuberculosis, limited or starting apparently from the pelvic organs, I simply wash out the peritoneal cavity. I do the same if I operate for a tubercular appendicitis. I wash out the peritoneum, close it, and hermetically seal it. I learned this long ago. For instance, I operated on a case of tubercular peritonitis, and through some defect I had a stitch-hole abscess. When I have that in a tubercular case I know that the abscess is going to continue for months and perhaps years. If I can close the wound, have a perfect union, and exclude the air, I will have no trouble whatever.

I use catgut as a general rule, in layers, but I never use it in cases of infection; that is, in sarcoma, cancer, or tuberculosis I do not use catgut or buried sutures of any kind. In such cases I prefer to use silkworm gut. Instead of using iodoform or some other agent, I employ bichloride of mercury, 1:10,000. I put two or three quarts into the abdominal cavity and wash it all out with two or three gallons of normal salt solution. I do not know whether bichloride of mercury does any good or not. It irritates the peritoneum a little; it stimulates the circulation there, and there is greater power of absorption. Perhaps normal salt solution would do this just as well. It does not do any harm. After washing out the abdominal cavity, I dry it and then sew up the wound solid. I do not drain, and the results, I think, from this plan are just as good as those obtained in the cases that are drained.

To illustrate: I had a peculiar case of this kind last year. I

was called to see a woman who had been in bed three months. The attending physician made a diagnosis of tubercular peritonitis, which I verified and said to the physician that the only chance this woman had was from an operation. I told the physician that I could not operate at her home. She was transported over the country for many miles, put in a railroad car, and taken to Detroit. I operated on her and removed one tube.

DR. DORSETT.—Why?

DR. CARSTENS.—Because there was pus there. She made a good recovery and went home. When she got up and about she had some trouble, and it was found that she had a rupture of the perineum, for which I had done nothing, and she developed a procidentia uteri. The uterus protruded and troubled her very much, so that she wrote to me and asked whether I would not remove her uterus. I thought that was the only thing to do in her case, because it would seem poor policy to make a ventrofixation, and it would be better to perform a vaginal hysterectomy, stitch the ligaments, and keep the vagina up. After about eight months she returned to me and I did a hysterectomy. In opening into the abdominal cavity I was astonished to see how clean it was. It was perfectly normal, and no one would imagine it had ever been the seat of tubercular disease.

DR. MURPHY.—What was the condition of the right tube when you operated the first time?

DR. CARSTENS.—There was a tubercular deposit about it, but when I took it out it appeared to be normal.

DR. WALTER B. DORSETT, of St. Louis.—In the consideration of this subject a distinction ought to be made between the different types of tubercular peritonitis. The dry variety is entirely different from any of the types that have been referred to in this discussion. We have ascending tuberculosis, where the tube is involved in the manner that has been described by Dr. Murphy, and I was very glad to hear him use the word ectropium in the physical description of the abdominal end of the tube. A condition where it is turned out, so that it looks like a wheat sack that is tied, I think is pathognomonic of tuberculosis.

In regard to whether we should drain or not in all of these cases: where we have the dry variety to deal with, the intestines being agglutinated to each other, but still no fluid in the abdominal cavity, there is no question as to the advisability of sewing up the wound without drainage. Where we have fluid, simply serum, we can wash it out with normal salt solution and sew the wound up. Where we have pus to deal with it is a different matter. In such cases we should either drain through the vagina or through the median line.

In regard to the question asked by Dr. Murphy as to whether any one had knowledge of a woman who had become pregnant when both tubes were involved, I will say that in one case in which I had the dry variety to deal with, there being no fluid in the abdominal cavity, where all the intestines were agglutinated,

when I opened the abdomen I thought I had a hopeless case on hand. There were symptoms of obstruction prior to the operation. The adhesions were separated, and the woman, inside of a year, became pregnant, and now has a child.

DR. MURPHY.—How were her tubes?

DR. DORSETT.—Her tubes were in one mass, just as much matted together as the intestines.

DR. HALL.—Did you open the pelvis so as to inspect the tubes and ovaries, or did you suspect from the agglutination they were involved?

DR. DORSETT.—I found the fundus of the uterus with the ileum over it; I stripped off the ileum from the fundus of the uterus, introduced my finger into the cul-de-sac, and separated the tube.

DR. MURPHY.—Was the mucosa of the tube involved, or was the tube adherent to the ovary? Did it functionate normally all the time? Was there a tubercular nodule in the position of the tube, which I have found sometimes impaired the utility of the uterus? Does tuberculosis of the mucosa of the tube, like tuberculosis of the mucosa of the intestine, ever heal? Tuberculosis of the intestine never heals. The only recorded cases are those that are healed by the injection.

DR. DORSETT.—It would be impossible to tell, in my opinion, unless the tube was taken out.

DR. MURPHY.—Did you feel a nodule in the tube?

DR. DORSETT.—No. There was agglutination. I have seen a number of cases in which large quantities of fluid were evacuated, the patients having lung symptoms, and I advised them to go to New Mexico, which they did and recovered. I do not think we do our whole duty if we neglect to send these cases to a more congenial climate, say New Mexico, Arizona, or Lower California.

DR. MILES F. PORTER, of Fort Wayne.—Dr. Dorsett has said in general what I wanted to say, and I shall only emphasize some of the points he made. We have been told by Dr. Hall to drain these cases. We have been told by Dr. Murphy, on the other hand, not to drain any of them, and the question is, what shall we do?

DR. HALL.—I did not drain all of my cases.

DR. PORTER.—These cases should be treated without drainage, whether fluid is present or not; and while my own experience is limited as compared with that of Dr. Hall, yet I am convinced, and this conviction is the result of study of all cases that have come under my observation, the results are better where drainage has not been resorted to, unless a mixed infection has rendered it necessary.

Another point: Dr. Carstens says that when he finds secondary deposits in the lungs he lets them alone. In that I think he is wrong. I believe there are certain cases in which secondary deposits favor rather than oppose operative intervention. Here again I am supported, not only by my own experience, which

is comparatively small, but by a careful study of the literature, which shows that it is a good rule not to avoid operation in those cases that have secondary deposits in the lungs and elsewhere. Just as you would operate on a case of anal fistula of tubercular origin in which there were pulmonary deposits, so that the man can get up and out and enjoy the benefit of sunshine and fresh air, so should you operate in the class of cases referred to by Dr. Carstens.

Permit me a word or two in regard to the method of drainage. For instance, in cases requiring drainage, supposing an incision is made in the median line through the rectus muscle, it is desirable that a hernia should not follow. Therefore drainage should be made from behind and the wound should be closed in front to avoid hernia. I believe that is the principle upon which Dr. Hall decided to drain these cases through the vagina.

DR. JAMES F. BALDWIN, of Columbus.—Dr. Hall informs me that he has not had occasion to reopen the abdomen in any of his cases. From the remarks made by Dr. Carstens I understood that he had reopened in one case. I wish to report a case in which I had an opportunity to reopen the abdomen and inspect the parts, because the conditions found were very surprising.

I operated on the patient for encysted ascites, the woman having a tumor about the size of an eight-months' pregnant uterus. The case was sent to me as one of ovarian cyst, but I changed the diagnosis to encysted ascites of tubercular origin. I found a large central cavity containing fluid, surrounded on all sides by firm adhesions involving both the large and small intestines. I made no attempt to break up these adhesions, but merely drained. The result was prompt recovery of the patient, but with an abdominal fistula. After this fistula had existed for two or three years it became so annoying that the patient returned to have it dissected out. I opened the abdomen, and was perfectly amazed at its appearance. One would not have known that anything had been wrong. The intestines, mesentery, and mesocolon were normal. It was a revelation to me, showing what nature could do. I dissected out the fistula, which was a blind tube running down into the pelvis, and she made a prompt recovery. I report this case simply to show that we may have a great deal of confidence in the *vis medicatrix naturæ*.

Let me report another case of the dry variety. A young man had had marked manifestations of tuberculosis for many years. He was a pronounced hunchback. He had a lumbar abscess which communicated with dead bone. When I first saw him he had had complete intestinal obstruction for eight days, but the chief trouble seemed about the appendix, though the entire peritoneum appeared to be involved. I made an incision through the right rectus muscle; here was encountered a mass of adhesions, which were separated, the badly-involved appendix removed, and extensive adhesions broken up. Drainage was established and the patient recovered perfectly. It is now three years since the

operation was done, and he has not had any return of the intestinal symptoms. He still has disease of the spine, but he is able to attend to his business fairly well.

DR. C. L. BONIFIELD, of Cincinnati.—I did not hear Dr. Hall's paper, but I know it must have been an excellent one, considering the large number of cases detailed by him. However, I desire to speak of one point referred to by Dr. Carstens, and to report briefly a case that has had much to do with the method of procedure in these cases.

Some five or six years ago, a girl, 17 years of age, was admitted to the Good Samaritan Hospital at Cincinnati, and operated upon by Dr. Joseph Ransohoff for appendicitis. I was not present at this operation, and I do not remember that I ever asked Dr. Ransohoff what he found. She recovered from the operation, but did not remain perfectly well. She went to the medical service of the late Professor Whittaker, and was treated by him for tuberculosis by the injection of tuberculin. Whether Dr. Whittaker based his diagnosis upon what was found in the appendix or lungs I am not prepared to say. After she had been under his care for six or eight weeks, and still not getting well, the main symptoms she complained of being persistent tympanites and indigestion, she was referred to my service. I opened the abdomen and removed her appendages for tuberculosis. They contained no pus, but the adhesions between the coils of intestines in the pelvis were very firm, as were the adhesions of the appendages. The removal of the appendages resulted in her complete cure, as far as one can judge without opening the abdomen again. I saw her on the street within a year, and she looked the picture of health.

The point I want to make is this: I believe in these cases it is good practice to remove as much of the tubercular disease as we can. If there are large nodules in the omentum which can be removed, this should be done. If the appendages are markedly tubercular, they should be removed. If the appendix has any indication of tuberculosis, I would remove it.

Some of the speakers have said that if the peritoneum can take care of as much tuberculosis as it does sometimes, it can take care of more, but we know from experience that all cases of tubercular peritonitis do not get well. If we can make the work a little less for the peritoneum, it would help nature by just that much.

DR. WALTER B. CHASE, of Brooklyn.—My experience in the matter of peritoneal tuberculosis is so small that I feel a little diffident in saying anything. I have listened, however, with great satisfaction to the discussions, yet I cannot refrain from expressing the belief, from my own observation and what I have learned clinically, that there is good and sufficient reason why we should not drain in the majority of these cases. I myself have never drained in them. Here the recuperative power of nature is pronouncedly in excess of that observed in other con-

ditions. It seems to me we should have good reasons for draining after an operation for tubercular peritonitis. The conditions under which it is advisable to drain have been referred to already, namely, those in which there is a mixed infection. I congratulate the reader of this paper on his wide experience and on his successful management of these cases.

DR. HALL (closing the discussion).—After doing abdominal surgery for a few years and encountering these cases, one point was emphasized in my mind in dealing with them, namely, that the mode of infection in women was probably not through the general system, but through the vagina, the uterus, and the tubes, as it is in ascending gonorrhea. The more I see and do of this work the more I am convinced that someone will rise up and demonstrate this to be a fact positively by original investigations, and thus prove that this is the source of infection in women. Should this be proven it will explain why we have tubercular disease in the abdomen in women so much more frequently than in men.

In this group of 110 cases there were operated upon for supposed appendicitis 12 cases—4 men and 8 women. I admit frankly that, with one exception, a provisional diagnosis of tuberculosis was not suspected. It was a recurrent attack of appendicitis. Nine of the patients had abscesses or foreign bodies in the appendix. One of them, a woman, has since married and is well. She is the only patient of the group who has ever become pregnant twice. Her pelvis was not explored. Not one of these cases had the uterine appendages removed. In a large majority of the cases of abdominal dropsy the tubes were found involved. There was quite a number of cases of encysted dropsy similar to the one to which Dr. Baldwin referred. There was no marked disease or pus in these cases. I did not classify them. In a large majority of the number it was plain that the nidus of infection was in one or both tubes, and I have almost universally, in opening the abdomen in this disease, removed the tubes. In young women, however, for the last eight or nine years, if I could save one ovary or both, and remove the tubes, I have done so, cutting them off into the uterus to get rid of the nidus there, leaving the ovary and uterus so that the woman could menstruate. In quite a large number the uterus was injured in enucleating the tubes, so that I was compelled to do a hysterectomy.

DR. CARSTENS.—Did you not have a great deal of hemorrhage in these cases, and difficulty in controlling it?

DR. HALL.—In one particular case there was nothing to do, after removing the abscesses, except to perform hysterectomy to stop the hemorrhage. A profuse menstruation usually accompanies the cases mentioned.

In reference to drainage, Drs. Porter and Dorsett have really expressed my views in regard to this matter. The dry cases ought not to be drained. The serum cases get well easier without

drainage. But if we do not drain in the mixed infections they will die, or we will have to reopen them on the second or third day. If we drain by the abdomen they may have a hernia, or the patients will always have a weak point. They do not like to be operated upon and they will oppose us. I have been draining these cases by the vagina, the drainage being kept up for a considerable time. I do not drain in anything like the majority of cases. Formerly I drained a good deal more than I do at present.

As to operating on patients with secondary deposits in the lung, I would differ with Dr. Carstens entirely and agree with Dr. Porter. A case in point is that of a high-school girl who had a mass as large as a cuspidor in her abdomen, which proved to be serum and pus, and both tubes were diseased. I did a hysterectomy for the same reason as in the case of the other girl. She had enlarged glands in both sides of the neck. I operated on her, and within two months afterward another physician took out a tubercular bone in the hand. The glands of the neck were enlarged, but were not removed, and the nodules disappeared in less than a year. She is in perfect health, has a position as a stenographer, and no one would ever suspect that she had been the subject of tuberculosis.

Dr. Baldwin asked if I had had occasion to reopen any of these cases. I have had occasion to reopen the abdomen in a case that was operated upon by another man, and in saying this I do not wish it inferred that some men may not have to do the same with my cases. This man, who does a good deal of surgery in Cincinnati, operated on this woman for a supposed ovarian tumor, but which turned out to be encysted dropsy. When he opened the abdomen he found more than he expected, got frightened, and sewed up the wound, after putting in a drain. She had a sinus which continued for a year or more; she was in such miserable health that she could not leave her bed but part of the day. She also had a mass in her pelvis, extending to one side. I could pass a probe from the sinus to a point behind the cervix; I could not tell where the uterus was located by a vaginal examination. I opened the abdomen, and an abscess cavity extended down into the tube, which was suppurating and discharging by the sinus in the abdomen. The other tube was a big abscess cavity. I removed both tubes and uterus. The woman made a good convalescence and has gained thirty-five pounds in weight. That is the only patient whose abdomen I have reopened for tubercular disease.

DR. CARSTENS.—Was there anything peculiar about these patients? This is an extraordinary number. Tubercular peritonitis may be more prevalent in Cincinnati than in Detroit or in some other cities. I would like to ask Dr. Hall whether there was anything peculiar about these patients, in the way of their nationality, family, or race, which would throw any light on this unusual number.

DR. HALL.—As I said in my paper, in a large majority there was nothing peculiar in the appearance of the patient. I will say, furthermore, that in a number of instances I did not make the diagnosis before the abdomen was opened. As one goes on in the work, and gets a little more experience and sees an increasing number of cases, he can suspect peritoneal tuberculosis. I do not believe nationality or family history has anything to do with it.

DR. BONIFIELD.—Were any of the patients colored?

DR. HALL.—Quite a number were colored patients.

PERSONAL VIEWS ON THE SURGICAL TREATMENT OF PERFORATED GASTRIC ULCER WITH GENERAL INFECTION OF PERITONEAL CAVITY—NOTES OF A SECOND SUCCESSFUL CASE.

By HENRY HOWITT, M D.,
GUELPH.

The surgical treatment of perforated gastric ulcer is too comprehensive a subject to be covered adequately in the time allowed by our Association for reading a paper. I have therefore deemed it advisable to confine my remarks as closely as circumstances permit to that particular variety of perforation in which, owing to its size, the absence of sufficient protection by adhesions, and the nature of contents of stomach, the whole peritoneal cavity becomes infected rapidly. This condition is caused generally, though not invariably, by the acute round ulcer. It may occur in the chronic ulcer, especially when it is situated on the ever-moving anterior wall of the organ, and doubtless in other situations when certain pathological conditions exist which prohibit the formation of a guard.

All the phenomena of acute perforation with rapid infection of peritoneal cavity may result, in a more indirect manner, in either form of gastric ulcer; for occasionally, before an ulcer of the stomach or other portion of intestinal tract destroys the peritoneal coat, local peritonitis precedes the event and attaches the threatened part to omentum or other adjacent structure, so that, when it is cut through, no escape takes place and hence no shock nor other symptom to indicate what has occurred.

Surgical literature and the records of postmortem rooms afford numerous and not rarely amazing illustrations of this wonderful provision of nature, which often mitigates the immediate result and even at times leads to a perfect cure; but restoration in this manner is the exception and not the rule. The contents of the stomach are seldom, if ever, aseptic; therefore, under these circumstances, a local abscess is apt to form

which may enlarge, rupture internally, and give rise to the same train of symptoms that we have in an unprotected one.

The symptoms which precede perforation of the stomach wall vary very widely indeed. There may be, previously to the event, a complete history, of greater or less duration, pointing to the trouble; while, on the other hand, the catastrophe may occur suddenly in a person apparently in excellent health, without a single symptom to indicate anything abnormal. The symptoms, for reasons that appear obvious, are probably more frequently wanting when the ulcer is situated away from the pylorus and near the lesser curvature; and especially is this likely to be true when the anterior wall is the affected part. According to Mayo Robson, they are absent in 8 per cent of the cases, but there is reason to believe that the actual percentage is somewhat higher.

In the particular class of gastric perforation under discussion the whole abdominal and pelvic cavities become quickly infected. The onset is announced suddenly by excruciating pain in the epigastrium, which the patient often describes as being of a burning and tearing character. All the symptoms of profound shock follow immediately. The surface of the body becomes pale, cold, clammy, and often has a bluish tinge; respiration is hurried, superficial, and, as regards movement, thoracic. The pulse at the commencement, according to my experience, is not greatly accelerated, may even be slower than normal, but, after a varying period, gradually becomes rapid, thready, and almost imperceptible at wrist, and the temperature is subnormal. The abdominal muscles are fixed, rigid, and extremely painful to touch, and the expression of face and general aspect of patient indicate overwhelming agony. The slightest exertion aggravates suffering; there is a dread of being disturbed, and even questions are generally answered in a slow, labored, whispering tone. The shock may cause death at times with astonishing suddenness. The absence of liver dulness is not a reliable sign in the early stage, nor is vomiting.

It is admitted that shock may be fairly well pronounced when the trouble is localized by adhesions to the epigastric region. Then how is it possible to ascertain in a particular case whether or not general infection of the abdomen is a factor? According to my experience, the diagnostication between the two forms is not difficult, although at the commencement the symptoms, except as regards severity, are often identical. In both forms the situation of greatest pain and tenderness at onset is in the epi-

gastric region, and in both at this period—when perforation is on the posterior wall—the pain tends to radiate into back in interscapular region; but in the form in which nature's guard of limitation does not exist, the highly irritating material gravitates downward and the site of *most intense pain* follows it. The rapidity of the downward flow to the pelvis depends on the size of perforation, the contents of the stomach, and the position of patient. As a general rule it is seldom more than an hour or two in reaching the pelvis, and occasionally the time is much shorter.

The change to which reference has been made in the position of the place of acme of pain, in my opinion, is exceedingly important in regard to early diagnostication of general infection in perforated gastric ulcer; for when this symptom is present we may rest assured that, so far as the abdomen is concerned, there is no limitation to the parts affected.

Notwithstanding what has been written by more than one eminent surgeon, I make bold to state that, when the initial symptoms and previous history are duly taken into account, there is no other disaster that occurs in the abdomen which can in every respect simulate acute perforation of stomach. In rupture of the gall bladder the history is different; in rupture of tubal pregnancy the situation of initial pain is in the lower abdomen; and so on through the whole list.

These observations necessarily do not apply to instances seen in a later stage of the disease—especially when the early symptoms have not been carefully noted, and the previous history is wanting in important details—for toward the termination of acute peritonitis which arises from an internal lesion, no matter where situated, the symptoms are in almost every respect the same.

Permit me to call attention to the advisability, when circumstances permit, of not administering morphia until enough data are obtained to make our diagnostication; for the drug, if given in sufficiently large dose to allay the pain in the early stage, will certainly mask the symptoms, give rise to false security, and render it impossible to ascertain the extent of involvement until the time for successful action is past. But as soon as we are satisfied that the trouble exists, morphia hypodermatically is not only justifiable but beneficial in more than one respect, for it allays the terrible pain, lessens the duration and effect of the severe shock, and in a material manner curtails the amount of

anesthetic required during the critical operation which the very nature of the complaint renders imperative.

Surgical Treatment.—Here we have a perforation of the stomach, with the contents, which are always irritating to the peritoneum and never aseptic, distributed in every nook and corner of abdomen and pelvis. Medicinal remedies are utterly powerless as regards cure, though beneficial in allaying pain and mitigating the effects of shock. Nothing short of early, bold, and thorough surgical work can avert a fatal termination. Then the sooner it is done after the disaster has taken place the better the chances are for the patient. Whether it be day or night, the patient should at once be prepared for operation.

Experience has taught me that it greatly expedites matters to have a large irrigating tank with a rubber attachment capable of carrying a stream almost an inch in diameter. Tait's large abdominal trocar makes an excellent nozzle; being bent at a right angle, it can be used without the hand in any way obstructing the view. The flow from this apparatus is sufficiently powerful to rapidly flush the whole cavity and carry away all solid particles that may be present.

It is a good plan, in order to save time, to have all sutures likely to be required threaded and placed in a separate receptacle ready for instant use. For closing the stomach wound there is no material as reliable as silk. It is strong and permits of a finer size to be used; its knot is small, but holds firmly; it is more easily sterilized without deterioration than any other; and, what is important, it acts kindly in this class of work.

When the necessary preparations are completed and the patient anesthetized, a median incision should be made extending from near ensiform cartilage to pubis. Then the bowels, large and small, are quickly eviscerated and protected by sterilized gauze wrung out of hot, aseptic saline solution or water, the temperature of the gauze being maintained by irrigation. If, as is often the case, distention of colon or other portion of intestine renders complete evisceration impracticable, a cut is made in the distended coil opposite the attachment of mesentery for the escape of contents. This procedure soon leads to collapse of the part and makes the work easy. The small enterotomy is closed in the usual manner with fine silk sutures. We now by these means have relaxed abdominal walls and have ample room to examine the stomach. First the anterior wall of the organ is inspected, and then, if unsuccessful, the lesser peritoneal cavity

is opened by tearing the gastro-colic portion of omentum, and the posterior wall exposed. It is better in all cases to examine both walls, for there may be two or more perforations. As soon as the perforation is located the part is brought as far as possible out of the wound, carefully washed, and surrounded with gauze sponges. When it is situated near the lesser curvature on the posterior wall, it is necessary to pull the stomach upward on chest.

If deemed advisable by the conditions that exist, the ulcer may be excised; for occasionally, on account of the unyielding and friable character of the surrounding tissue, closure is impossible without doing so. This is more liable to be the case when the situation is near the pylorus; but generally the perforation is simply closed with two or more rows of sutures. It is always advisable, when practicable, to attach a tag of omentum over the part.

Now we inspect by view, as thoroughly as possible, every pouch and corner in the abdomen, and flush each with a large stream of normal saline solution at a temperature of about 105°F. The lesser peritoneum, the space between diaphragm and liver, under liver, in flanks around each kidney, the pelvis, and between folds of mesentery, require special and careful attention. The large abdominal incision and evisceration make this part of the work merely a matter of a few minutes' time when a proper irrigation apparatus is used.

Then comes the question of drainage in these cases. I believe it is always safer to resort to it. It is my custom to drain with three soft, pure-rubber tubes, none of which is inserted through the median incision, but through stabs as far from it as circumstances will allow—one at back in each flank depression below kidney, and the other for drainage of the pelvis to right or left of the median line a little above Poupart's ligament. The end of the pelvic tube reaches the bottom of the pelvis. It is advisable in married women to put the last-mentioned tube through a puncture in the floor of Douglas' pouch and drain through the vagina, for then there is less risk of the incision becoming infected by the discharge; besides, the drainage by this route is more perfect.

As soon as the tubes have been inserted and the intestines replaced, the omentum is spread carefully over them and attached by a suture or two below the lower angle of incision, so as to prevent a coil of bowel from forming attachment to any place

along the internal course of the line of incision afterward, and then the incision is closed as quickly as possible in the manner deemed advisable by the surgeon in charge. Although I am an advocate of closure of abdominal incisions in layers by absorbable buried sutures, in both the cases of perforated gastric ulcer with general infection of abdomen that came under my care, owing to the necessity for haste, the incisions were sutured by the through-and-through method with silkworm gut, always being careful with each suture to catch the fasciæ. In these and in similar conditions of general infection from other causes in which a long incision was required and which was closed in the manner stated, no weakness has afterward shown itself along the course of wound, though such has not always been the case with less extensive wounds. It is probable that the prolonged rest required may be the reason that no hernia results. The main wound is very carefully dried and dressed with dry sterilized gauze, sealed with oiled silk and collodion, and supported with straps of strong rubber adhesive plaster. The tubes are separately covered with gauze wrung out of hot bichloride or carbolized solution, which is changed as frequently as the amount of discharge demands. It is well to dispense with the tubes as soon as the requirements of drainage allow.

Eleven years ago last June, before this Association at Detroit, in the discussion on the papers of Drs. Reed and Longyear relating to "the technique in closing an abdominal incision," in which special attention was paid to the avoidance of hernia, I drew attention to the importance, in cases in which drainage was necessary, of draining through a puncture away from the incision. In my practice the result of this method has proved very satisfactory, not only in the subject under discussion, but in all cases of abdominal work in which a tube or gauze drain becomes a necessity. Especially is the method beneficial in severe instances of appendicitis with abscess; for in them, when the tube is inserted through a stab in the back to the right of the ascending colon and above the crest of the ilium, the flow from the tube is favored by gravitation and the discharge is away from the incision, which may be closed and sealed as in non-suppurative operations.

On more than one occasion in the past I have called attention to the importance, in desperate conditions of the patient, of injecting a quantity of warm peptonized milk or other suitable nutritious liquid food into the jejunum during the operation.

It takes only a few minutes' time, yet the effect in tiding the patient through the critical period that follows is more marked and lasting than that of any other method which can be adopted at a later period.

The after-treatment is simple. Dry, warm applications to the surface of the body, especially to the extremities. Strychnia and normal saline solution injections when indicated. No opiate under any circumstances, unless it is quite plain that our patient is doomed. Nothing by mouth for five or six days but sips of hot water. The patient is nourished at first wholly by nutritive enemata, each of which, after the first day, is preceded by an enema of a pint or more of warm water in which an ounce of magnesium sulphate has been dissolved. When the bowels have been freely moved the laxative enema should only be given when required. If thirst be troublesome, a large, high rectal injection of water is beneficial. By the fifth day, if everything has gone well, small quantities of liquid food may be given by mouth and the amount afterward gradually increased. It is safer not to give solid food till after the second or third week.

No matter how kindly the wound heals, the sutures should not be removed before the eighth day, and even then it is better to remove only every second one. After all have been taken out, the part should be supported by long strips of adhesive plaster and a firm and unyielding bandage.

It has often struck me as being strange that the ulcer heals when the perforation is merely closed by sutures. I have frequently asked the question, but have never received an answer that appeals to reason in a satisfactory way. Do the sutures play any other part in inducing the beneficial result than that of holding the sides of the perforation together, or is the solution to be found in the prolonged rest that the stomach has afterward?

In a former paper, "Notes of Four Cases of Perforated Gastric Ulcer," read before this Association in 1900, I reported a case of perforation with general infection of the peritoneal cavity in which stenosis of the pylorus demanded gastroenterostomy. After the operation the young man, a farmer, enjoyed excellent health, was accustomed to hard work, had an appetite like a lumberman, and, although he was in no way particular in regard to his diet, was never conscious, by reason of distress, that a stomach formed a portion of his physical constitution until two weeks ago.

On the third day of the present month a peculiar and, from a surgical point of view, an interesting event happened to him. In the afternoon of that day, when working in the field, he became aware of a tenderness in the abdomen just above and a little to the left of the umbilicus, but it did not prevent him from finishing his day's work. After supper the pain was more pronounced and the family persuaded him to consult me. He drove to the city and while in my office the pain suddenly became intense. Shock was pronounced, accompanied with nausea and vomiting. He could not bear the slightest pressure over an area of several inches in extent, the centre of which was close to the left side of the navel, and this part was rigid. Pulse 88, temperature 100°. He was at once taken to the hospital, where we found a perforation of the jejunum by a round ulcer with a thickened and dense area around it. It was situated on that part of the proximal arm of bowel which at the previous operation was attached to the stomach wall above the anastomosis. It appears evident that when the ulcer cut the peritoneal coat the adhesion became affected and gave way. The aperture was closed and the bowel again stitched to the wall of the stomach.

At the time it was noticed that the gastroenterostomy performed on February 20, 1900, had caused the stomach to assume a triangular shape, the lower angle of which is situated close to the umbilicus.

The patient has not had a single bad symptom and is now practically well again.

It is my belief that this is the first time that an operation for a perforated ulcer of the jejunum as a result of gastroenterostomy has been reported in America. In a recent work written by Mayo Robson and Moynihan, reference is made to the liability of peptic ulcer occurring in the jejunum after gastroenterostomy, and the authors give the names of Continental men who have reported cases.

My second case is a good illustration of acute gastric perforation in which the previous signs and symptoms of ulceration of the stomach are wanting.

Miss K. F., aged 21 years; family history good; the daughter of a farmer; accustomed to work; height 5 feet 5 inches; weight 132 pounds, and, except some trivial ailment peculiar to childhood, had never been ill.

In the first week of December, 1901, she had for a few days a feeling of distress in stomach after eating a hearty meal; but

this was never so severe as to interfere with her ordinary duties, and on each occasion it passed away in less than an hour. She neither lost her appetite nor vomited. These after-meal attacks ceased without medicinal aid or any departure from her usual diet.

On the 15th of the month she had a hearty dinner and ate an unusual quantity of pickled cucumbers. This meal caused some distress not amounting to pain. At 6 o'clock that evening, while engaged preparing supper, she was suddenly seized with overwhelming pain in the epigastric region, which radiated into back. She fell upon the floor in a state of collapse, and was carried immediately to her bed, when she vomited a large quantity of undigested food containing many pieces of the pickle eaten six hours previously.

Dr. Robinson, of Guelph, saw her at 8 P.M., two hours after attack commenced. He found her in terrible agony; surface of body—especially extremities—pale, cold, and clammy; temperature 96°, pulse 126; abdomen rigid and tender. Although the pain in stomach and back was severe, the place of greatest suffering had by this time moved downward and was situated a little below the umbilicus, chiefly to the right of the median line. The doctor, after having diagnosticated the nature of the trouble, gave the patient a half-grain of morphia hypodermatically and later a quarter of a grain more. By 9:30 the severity of the pain had abated considerably. On his return to the city he mentioned the particulars of the case to me, and we decided to advise the removal of the patient to the hospital for as early an operation as possible. Fortunately the family consented, and the patient was driven three miles to hospital in an ambulance temporized out of a milk wagon, in zero weather, arriving there at 12.30 A.M. the following morning. When I saw her half an hour afterward I was puzzled. Her pulse was 80, temperature 98°. Positively there was no tenderness on firm pressure on any part of the abdomen, except in cecal region; even here the pain was slight. Away from the right iliac region no noticeable rigidity existed. The part over the stomach and transverse colon was distended by gas. Patient answered questions readily and without apparent effort, was quite cheerful, and stated that she was well again and free from any discomfort. She laughed during the interview and made light of the whole matter. Her case in this respect is a good example of the marvellous power of morphia to mask the signs and symptoms in the early stage of

acute peritonitis, and makes plain how easily a consultant may fall into error when the initial symptoms and treatment are not duly considered. I must admit that my personal examination of the patient gave rise to doubt in my mind as to the gravity and even the nature of the trouble, and consequently induced me to depart in the beginning of the operation from the method I advocate.

At 3 in the morning she was taken to the operating room and anesthetized. First, an incision was made in the median line from near the ensiform cartilage to the umbilicus. No free gas or fluid was found. The transverse colon, being distended by gas, obstructed the view and had to be held below with a gauze sponge. Examination of the anterior surface of the stomach revealed no abnormal condition except marked engorgement of vessels near the greater curvature and in the gastro-colic omentum.

Believing now that a mistake in diagnosis had been made and that the appendix was at fault, the wound was protected with sponges and the usual opening for appendectomy was quickly made, from which escaped, when the peritoneum was cut, a considerable quantity of watery pus; but on the appendix being brought into view it was found to be normal in every respect. It was then noticed that the discharge had not the characteristic offensive odor, and on testing with blue litmus paper its acid reaction was ascertained. The source of trouble was now plain, and the median incision was at once extended to the pubis, the distended colon collapsed, and bowels eviscerated and protected. On tearing through the gastro-colic omentum, pus escaped and particles of stomach contents were noticed in the latter.

On pulling out the stomach as far as possible on chest, a largish, irregular perforation was found near the lesser curvature. It was surrounded with an area of dense, thickened tissue, the longest diameter of which was more than an inch and a half in length. The part could only be reached with tips of fingers. The field was carefully cleaned, and then, by aid of a needle holder and a long pair of tissue forceps, a row of sutures was inserted in hardened tissue close to the perforation; but on attempting to tie, every one of the sutures tore out. The position of the ulcer rendered excision out of the question. By means of a long, narrow instrument an assistant depressed the whole area and then folds of adjacent wall were sutured over it. This stage of the operation was extremely difficult and tedious. When it

was finished every portion of the abdomen was inspected. The flank depressions and pelvic cavity were found to be completely filled with pus containing loose pieces of partially organized lymph. All parts were flushed clean, the drainage tubes inserted, bowels replaced, omentum fastened below, and both wounds closed with through-and-through silkworm sutures. It was almost 6 A.M. before the patient was placed in her bed. Only one hypodermatic of strychnia was considered necessary. For the first three or four hours she had nausea and vomited considerable greenish fluid. Afterward her recovery was uneventful. The temperature never rose above 101° F. The pulse for the first three days ranged from 108 to 132, but was seldom above 116; it then gradually improved and by the end of the first week was normal. For four days all nourishment was supplied by rectal enemata and nothing by mouth except sips of hot water. Then small quantities of peptonized milk, albumen water, broth, and the like were allowed to appease hunger. No morphia was given nor was pain at any time after operation troublesome. There was considerable discharge from drainage tubes, especially from the one placed in the pelvis. Those in the flanks were removed in forty-eight hours, while the one in the pelvis, although gradually shortened, was not dispensed with until the fifth day.

This young lady, considering the circumstances, made a rapid and complete recovery and has not had any gastric disturbance since. Early this summer she married, and has now a home of her own and its cares to look after.

In conclusion allow me to state that the essayist is well aware that many surgeons very strongly object to evisceration of intestines in abdominal work; but in the conditions under discussion there is no other known method by which the operator can make certain that the toilet of the peritoneal cavity has been thoroughly done. For here, no matter how perfect in other respects the technique may be, imperfect toilet is followed by more shock and is vastly more dangerous to the patient than hours of properly conducted evisceration.

DISCUSSION.

Dr. Walter B. Dorsett, of St. Louis.—I consider this one of the most valuable papers read before this society, because it is a departure in general surgery, and I know of but one similar case that has been operated upon in the Mississippi Valley. This patient was operated upon by a young man who had graduated about six months before; he was a daring sort of fellow, would go at things in a haphazard manner as an interne, and he had not been practising more than three months before he had a case of gastric ulcer upon which he operated and saved the patient. He reported the case to a small county medical society, and I believe, as I said before, it is the only case of the kind that has been operated upon in the Mississippi Valley.

Dr. Howitt deserves great credit. He has opened up a new field. We should encourage him to go on with his work. I believe a great many abdominal surgeons will find many of these cases that ought to be operated upon, and I have no doubt they will operate on them and save a class of patients that heretofore have died for the want of proper surgical intervention.

Dr. I. S. Stone, of Washington, D. C. (by invitation).—One thought occurred to me while Dr. Howitt was reading his paper, namely, that gastric ulcer heals with a cicatrix, and during an injury or an acute attack of severe vomiting the ulcer of the stomach may be torn open. I recall such an instance. A man had for years a gastric ulcer, which finally healed. During an attack of influenza rupture took place at two o'clock one morning. He died at eight o'clock that night. I mention this as the most rapid of all forms of peritonitis with which I am acquainted. I do not think the essayist emphasized that point. I remember very few instances where there is such a rapid spread of infection as after this accident. I think the time will come when these patients will be operated upon within three or four hours after the occurrence of the symptoms.

Dr. Miles F. Porter, of Fort Wayne.—While I have not had any experience along the precise line of Dr. Howitt's paper, I have had one patient who died as the result of shock. A diagnosis of gastric ulcer was made months before perforation occurred. I saw the woman a few hours after perforation had taken place, or what I considered to be a perforation at the time, and a post-mortem examination proved it to be correct. I do not believe that patient would have died of shock if I had known then as well as I do now how to treat shock. I believe that if I had injected a little morphine when I first saw the woman, it would have produced such alleviation of symptoms as would have encouraged me to operate. Do not understand me as advocating the use of morphine as a curative measure in these cases. It is

wrong practice; but when you make up your mind that you have got a condition that you are going to operate on, after having made your diagnosis, and the patient is suffering from pain and shock, the injection of morphine in such a case is a life-saving measure while you are getting ready to do the work.

DR. HOWITT (closing the discussion).—I desire to thank the fellows of the association for the attention they have given to my paper at this late period of the session.

The first speaker referred to the advisability of early operation in the cases under discussion; it is a very important point, for here, as a rule, the course is so rapid that it is useless to operate after forty-eight hours, or even after a much shorter period. The earlier the operation, other things being equal, the better are the chances for the patient.

I believe that the time will come when operations for the relief of gastric troubles will be done with almost the same frequency as are operations to-day for disease of the appendix. My paper is limited to a particular variety of perforated gastric ulcer, but there are several other forms of gastric ulcer, perforating and non-perforating, that give rise to numerous abnormal conditions of the stomach, which interfere with its function and often render life miserable. These conditions are beyond the power of drugs, and are only amenable by surgical aid.

One gentleman referred to the virulent character of the infection. I agree with his view, for there is no other extravasation that occurs in the abdomen in which the infecting material spreads as rapidly as it does in acute perforation of the stomach. As to shock, it is severe and pronounced, greater than in almost any other abdominal trouble. One of my cases (I believe the second one reported in my first paper on the subject, which was read before this association in 1900), a young woman, died within a few minutes after the perforation occurred.

It is extremely important to diagnosticate these cases early, and in regard to this I believe that one of the points I have endeavored to emphasize in my paper is an important one, namely, that the situation of the acme of pain changes.

DR. DORSETT.—I would like to ask Dr. Howitt whether he takes out the edge of the ulcer.

DR. HOWITT.—When we have much thickening of the tissue around the ulcer it is impossible to close the perforation without removing the edge; in fact, it is necessary to convert the round, rigid perforation into an oval wound, the sides of which may be easily sutured. In the majority of cases the ulcer is closed by sutures without excision. Just why the ulcer heals when merely sutured I do not know; probably the prolonged rest and change of diet have something to do with it.

A word in reference to the material for sutures: for the reasons given in my paper, I prefer fine silk, and it is my opinion that there is no other material known to the profession that acts so well as it in intestinal work.

DR. BALDWIN.—I infer from what Dr. Howitt has said that he condemns catgut, and I would like to ask him if, in these cases, he has ever used fine chromicized catgut.

DR. HOWITT.—I have tried fine chromicized catgut in intestinal work, but I found the knot too large and an ordinary tie apt to give way. In gastric and intestinal operations I prefer silk to catgut or any other material I have used.

DR. BALDWIN.—Personally I have used catgut for many years, with absolute exclusion of silk, using it in the intestines and stomach without the slightest trouble, and I think I shall continue to use it for the present. I have never had any trouble to my knowledge.

DR. CARSTENS.—What number?

DR. BALDWIN.—Never larger than No. 1. I have within the last year in one case used silk, simply closing the edges, making anastomosis with the mucous membrane, putting it all inside. For the outside layer I used chromicized catgut, and I like it very much.

DR. HOWITT.—I am quite satisfied with silk, because it is strong, the knot is small and not liable to give way, and I find that it acts very kindly in these operations.

REPORT OF TWO CASES OF GASTRECTOMY—WITH REMARKS.

By ALBERT VANDER VEER, M.D.,
ALBANY.

At one of the meetings of the Medical Society of the County of Albany, I think during the winter of 1885, in presenting a number of pathological specimens, I exhibited a stomach that I had removed post-mortem, a case of carcinoma, and in my remarks I said to the gentlemen present that this organ could have been removed with probable success. In all my abdominal work from that time on I did not meet with another case that offered any encouragement in doing this operation until the following:

Case I.—Mrs. B. S., Albany, N. Y., æt. 42, married, housewife by occupation. Entered the Albany Hospital February 12, 1900.

Present Illness.—More than one year ago noticed that when taking solid food she would vomit five or ten minutes afterward. Liquids did not distress her, nor did she have any pain. During the past year she has not been able to take solid food of any kind. Once in a great while would vomit, even if strictly on a liquid diet, never any great amount. Has lived mostly on milk. Has lost considerably in weight. For about two months has noticed a bunch in left side, which has gradually increased in size. On physical examination this can easily be made out, just above the umbilicus, and a little to the left of the median line—a tumor, lobulated and size of her fist, with slight tenderness on palpation.

Past History.—Married at 21 years of age; has had six children, four living; no miscarriages; menstruation always regular.

Family History.—Patient has four brothers and four sisters

alive and well. No history of malignancy or tuberculosis. She remained in the hospital until operation, vomiting more or less continuously. Diagnosis made of carcinoma of the stomach, probably involving omentum and transverse colon. The case was thoroughly explained to the husband and patient, and their consent readily granted to an exploratory incision, with the understanding that if the diseased mass could be successfully removed we would go on with the operation. The patient, while in the hospital, had been given one grain of calomel, in divided doses, followed by two A. S. and B. pills, and apparently producing a good movement of the bowels. The intestinal tract was thoroughly emptied by means of rectal enemata. Pulse previous to the operation did not go above 100 at any one time. Respiration was slightly increased and temperature normal. She had slept very well, although somewhat restless the night previous to the operation.

Operation February 20, 1900. Gastrectomy. Median incision between ensiform cartilage and umbilicus. Upon opening the abdomen a hard mass occupying the greater curvature and cardiac end of the stomach was found. There were a few adhesions, but the neighboring glands were not infiltrated. The omentum was ligated in sections, and stomach loosened from all of its attachments. The duodenum and pyloric end of the stomach grasped with forceps and section made well below the tumor, the stomach being gradually worked out of its bed up to the cardiac end. Cardiac end of the esophagus grasped and stomach removed. Duodenum joined to end of the esophagus by means of a medium-sized Murphy button. In the entire operation very little blood was lost. There was considerable tension observed at the time, the disease extending so close to the diaphragm, and the esophagus was loosened by lateral incisions. The abdominal wound closed by silkworm-gut sutures and standard dressings applied. Anesthetic fairly well taken, operation lasting one and one-half hours.

Patient returned from the operating room with a cold, uncomfortable perspiration over the surface of the body, which was relieved by brisk rubbing and wrapping up in flannel blankets. Pulse 126. She complained of a good deal of difficulty in breathing; could not take a full inspiration, at times

gasping for breath, and had a great desire to sit up. Mouth very dry. Hot bottles applied to extremities.

February 20, 3 P.M.: Pulse 114. 4 P.M.: Pulse 108. Mouth occasionally cleansed with hot water; patient apparently reacting very well, much warmer, and a better pulse of good volume. 5 P.M.: Was turned on her side and a pillow firmly applied to back; complained of pain through abdomen. 6 P.M.: Pulse 116; rectal enema well retained. 6.30 P.M.: Pulse 126; one-sixth grain of morphia given hypodermatically. 7 P.M.: Pain much less severe; patient said she felt better. 8 P.M.: Pulse 124, temperature 98.8°, respiration 30. 9 P.M.: One-thirtieth grain of strychnia continued every three hours, rectal stimulating enemata every four hours, hypodermatically; has slept a few minutes and feels quite comfortable. 9:30 P.M.: Sleeping. 10:10 P.M.: Rectal enema well retained; pulse 128. 10:45 P.M.: Pulse 118, good volume; very quiet; not sleeping. 11 P.M.: Voided four ounces of urine; position changed more to side. 11:30 P.M.: Complained of sharp pain in right side of abdomen; position changed, by great desire of patient, and she was made much more comfortable.

February 21, midnight: Temperature 100°, pulse 124, respiration 26; perspiring very freely; hot-water bottles continued to feet. 12:30 A.M.: Sleeping; pulse good. 1 A.M.: Slept fifteen minutes; belching up a little gas; no nourishment allowed, but mouth rinsed frequently. 1:10 A.M.: After sleeping ten minutes, awoke with a start, giving herself quite a severe movement of the body; pulse soon after became weaker and rapid, about 140. 1:20 A.M.: Hypodermatic injection of brandy, repeated in a few minutes; legs and arms rubbed with warm alcohol; skin cold and unpleasant to the touch. 1:45 A.M.: Dressings changed and wound found to be in good condition. From this time on the patient grew more restless, pulse much weaker, respiration increased to 36, very labored, gasping and sighing for breath, and she died at 3:30 A.M.

Upon opening the site of the incision it was discovered that the attachment between the duodenum and esophagus had given way; that the upper segment of the Murphy button had loosened in its attachment to the esophagus, allowing what little fluid contents were present to escape into the peritoneal cavity.

I cannot conceive of a more embarrassing position than in doing an operation of this kind, as it becomes very difficult to make attachments to the under surface of the diaphragm only.

CASE II.—Transferred from the medical side by Drs. Ward and Neuman. Mr. H. M., æt. 55 years; native of Canada; blacksmith by occupation; residence, Turner's Falls, Mass. Entered Albany Hospital January 1, 1902. Diagnosis, sarcoma of the stomach. Operation, gastrectomy. Result, recovery.

Family History.—Mother died, æt. 70, of heavy cold; father, æt. 63, of pneumonia; one sister and two brothers living and well. One brother died, æt. 28, of inflammation of bowels; one brother, æt. 35, from disease contracted from a horse, possibly actinomycosis.

Previous History.—Patient had ordinary diseases of childhood; pleurisy in 1873. Has had occasional attacks of vomiting since 1877; hernia in 1883, for which patient has since worn a truss. He has used tobacco for forty years—chews it and smokes a pipe. Has used alcohol for about twenty years in the form of beer and whiskey. Is a hearty eater. No further history of specific trouble. Bowels always regular.

Present Illness.—Began in October, 1900. Pain in epigastrium, independent of food, and especially marked between 4 and 5 o'clock P.M., with vomiting any time during the day, which generally relieved pain. Quite diffuse burning sensation after vomiting. Considerable eructation of gas occurred. Appetite very poor since onset of disease. Vomitus had a sour, bitter, disagreeable taste. Bowels constipated; no bladder symptoms. Chilly sensation occasionally at night. No cough or shortness of breath. No night sweats. Has lost about 44 pounds in flesh since beginning of trouble, and much strength. Has been spitting some blood since having pleurisy, more especially since present trouble came on. Vision and hearing impaired; general sensations normal.

Physical examination, January 1, 1902: Patient 5 feet 10 inches; weight, 148 pounds; well developed; lies on right side; expression cheerful; skin and mucous membranes rather pale; face slightly flushed; tongue slightly fissured; pupils medium-sized, equal and react to light and accommodation; pulse 80, regular and full; arteries atheromatous. *Thorax*—Normal in shape, symmetric, clavicles somewhat prominent, costal angle

wide, expansion fairly good; palpation and percussion negative. Auscultation: Breathing harsh at apices, with prolonged expiration. *Heart*—Dulness begins above at upper border of fourth rib, limited externally by nipple line and internally by left sternal border. First sound at apex extremely loud, and second aortic sound exaggerated. *Abdomen*—Oval, symmetric, respiratory movements transmitted; percussion note tympanitic; tenderness in epigastrium; muscular resistance all over upper half of abdomen; reflexes normal.

The case was explained to the patient, and the operation of gastrointestinal anastomosis suggested, believing that this was all that could be done. The patient readily consented, being desirous of obtaining relief, even temporary, if possible.

Operation January 4, 1902, at 11 o'clock A.M. Ether and A. C. E. administered. Median incision four inches in length. Entire stomach (which was quite movable), with the exception of about two inches at the cardiac extremity, found involved, as were also the surrounding glands. It seemed possible to do a gastrectomy, which I proceeded with.

Mesentery tied off with fine silk. Stomach clamps applied, and, after thoroughly walling off the surrounding parts with tampons, the stomach was excised at about two inches anteriorly and three inches posteriorly from the cardiac end and just below pylorus. The posterior and all involved glands thoroughly removed. Excised ends brought together and sutured with silk sutures, and all raw edges invaginated by peritoneum. Abdominal wound closed with interrupted silkworm-gut sutures, and one vaginal iodoform gauze left in for drainage. Iodoform gauze and standard dressing. Operation lasted one and one-half hours. Anesthetic (ether) well taken.

After operation, patient at times restless and weak, highest temperature 102°, pulse 126, but he responded well to stimulating enemata, and went on to uneventful, complete recovery, the only complication being some delirium for a short time after the tenth day, and a stitch-hole abscess. The after-treatment of this patient consisted in giving nothing by the mouth for forty-eight hours, and several saline injections. He was allowed to rinse out his mouth with hot water occasionally. Stimulating rectal enemata given every four hours, patient retaining same very nicely. His thirst was quite distressing for a time.

At the end of forty-eight hours the dressings were removed and found somewhat stained from the drainage from peritoneal cavity. Part of the iodoform-gauze drainage was removed, the balance at the end of the fifth day. Aside from this, no unusual treatment was called for.

Pathological report was as follows: Anatomical diagnosis, carcinoma of stomach in region of pylorus. Microscopical diagnosis, round-celled sarcoma of stomach, with metastases to neighboring lymph glands.

Patient returned home on the twenty-fourth day, and the following is from Dr. Houle, his attending physician:

February 3, 1902: "Mr. M. arrived home January 30, and, although a little fatigued, yet he bore the journey remarkably well. I dressed abdominal wound on the evening of his arrival and found it in very good condition. His appetite is very good indeed, and he would eat more if I dared let him. Have seen him every day since, and his pulse and temperature have been normal at each visit. He is in good spirits and feels confident that many more will be sent *ad patres* before him. His mental condition was somewhat disturbed Thursday and Friday A.M., but to-day it is much better. Will advise you from time to time about his progress."

April 12, 1902: "I told you Mr. M. had a stitch abscess. This healed, another formed near it, and yesterday I located a buried suture, situated in centre of abdominal incision, just to right of median line. There has been more or less oozing of seropurulent matter from this location, and is annoying my patient; otherwise he is the picture of health and weighs 165 pounds. I did not care to remove suture without getting your opinion in the matter." Answer sent to remove suture at once.

Patient exhibited at meeting of American Surgical Association, Albany, N. Y., June 4, 1902, and presented the following history: Appetite excellent; bowels in good condition; wound thoroughly healed; is able to eat any kind of food, and in increased quantity. Mr. M. has gained over 30 pounds in weight.

On September 13, 1902, a letter received from his physician states that on August 1 Mr. M. purchased a blacksmith shop, is able to work at the anvil, and is apparently in full health.

Remarks.—The rarity of this operation impresses itself upon one who is doing much abdominal surgery. Very few cases

present in which the operation of gastrectomy can be performed. Partial resections are not infrequent, gastrointestinal anastomosis by no means uncommon and a very satisfactory operation.

My first case presented the most serious complications in regard to the disease, extending up to and implicating the diaphragm, and were I to operate in another similar case I would certainly close the duodenum, bring up a fold of the jejunum and attach it to the under surface of the diaphragm, including the esophagus, and not attempt the use of the Murphy button, thus relieving the parts from any strain. Undoubtedly it was this traction that caused her the severe pain in the back and the difficulty in breathing, the parts dragging upon the diaphragm, ultimately separating it from its attachment to the friable portion of the esophagus.

It is a question whether the sudden start from her sleep did not have some bearing upon the action of the diaphragm, causing loosening before adhesions had taken place.

The second case is very remarkable, regarding the complete recovery the patient has made, and in the great amount of comfort attained, not only in his ability to attend to work again, but in his pleasure in the variety of diet he is able to assimilate. His increased nutrition illustrates the fact that the stomach can be removed and the remaining portion of the intestinal tract perform the necessary functions.

THE MANAGEMENT OF CASES OF EMERGENCY ARISING FROM RUPTURE IN ECTOPIC PREGNANCY.

By AUGUSTUS P. CLARKE, M.D.,
CAMBRIDGE.

THE subject here presented must always be of deep concern both to the physician in the city provided with every means for reasonable care of patients, and to practitioners residing in places at considerable distance from the greater medical centres. The occurrences of the more seemingly desperate cases coming to the treatment of any one obstetrician do not appear, upon the whole, to have been very numerous, for many physicians who have had quite an extended experience have scarcely met with a case. This may sometimes be due to the fact that cases of extrauterine or ectopic pregnancy having been early diagnosticated may have been brought under appropriate treatment before the more dangerous symptoms had supervened. The occurrence of cases of alarming nature to treat will now and then take place, and this may at times happen when the practitioner, even if he should be a most skilful operator, feels the least prepared to meet such an emergency.

Operators have also recognized the difficulty that may sometimes be met with in the differentiation of the various forms of ectopic pregnancy, if not as to their always being certain as to the existence of such a kind of pregnancy, and so measures may be delayed as to the safe management of such a case. Some forms of pelvic hematocele are no doubt due to the presence of ectopic gestation. I can enumerate quite a few of such cases that were evidently the result of this cause. In cases of hematocele there is often more or less shock attended with considerable free hemorrhage and a marked exsanguine appearance of the patient. Cases of this character, so far as I have been able to ob-

serve, have occurred in the very beginning of the pregnancy. I shall never forget my experience in a case seen some few years since with the late Dr. Nelson, of Boston. We had seen the patient three weeks previously and had concluded that the case was one of tubal gestation. Rectal indagation, as well as bimanual examination, revealed that there was a circumscribed mass in the right iliac fossa; the patient had passed over a menstrual period. Other phases also pointed toward pregnancy. Early in the morning, on being called to the patient, I found her in a state of much collapse; the pulse was weak and the heart's action was greatly depressed. The sudden enlargement in and about the mass in the pelvis afforded almost unmistakable evidence of rupture of the fetal sac, and of hemorrhage. An abdominal incision, made in the median line, showed at once that the condition of the patient was due to hemorrhage from rupture near the fimbriated extremity of the Fallopian tube. The mass was brought forward and secured by aseptic animal sutures and then incised. The abdominal cavity was thoroughly irrigated with warm water. The incision was closed without resort to further drainage. The patient made an uninterrupted recovery. The fetus was of the size of one of about forty-five days' duration.

In another case to which I was afterward called the patient had sustained sudden shock from an apparent loss of blood; a small mass just above the left iliac fossa could be made out. An abdominal incision disclosed the presence of quite a considerable clot about the distal extremity of the Fallopian tube, but no fetus could be found. Though the hemorrhage had ceased for the time being, the point of a small artery from which the blood had escaped was made safe by ligature; the cavity in and about the site of the hemorrhage was cleansed and drainage by the insertion of iodoform gauze was established. The incision was then practically closed; recovery took place without any serious mishap, all drainage having been dispensed with on the fourth day.

In considering the condition of this last case I have sometimes felt that the patient would have, by means of more palliative treatment, recovered without having been submitted to an abdominal section. In the first case the chances without the patient's yielding to operative measures would have been against

her recovery, because the abdominal section showed that considerable hemorrhage was still going on and that the patient's strength was gradually being diminished; besides, there were dangers incident to infection and to the presence of the foreign mass.

In the consideration of the question of the proper management of any case of rupture in ectopic pregnancy, it should not be overlooked that patients meeting with such mishaps do not infrequently, by the aid of the more general measures of treatment, recover. This is evidenced by the cases coming from time to time, long after reaction has taken place, to the surgeon for operative interference. The history of such cases often shows that the patients had suffered from severe shock from hemorrhage, but must have, of course, recovered.

On referring again to my own notes made in regard to unusual sequences of pregnancy, I find that, in three cases of undoubted rupture occurring in the early stage of ectopic gestation, two of the patients recovered without having to submit to radical operative measures; in the third case, however, the ending was fatal, the patient's family declining to have an operation undertaken. In this last case the surroundings of the patient and her own condition at the time being so unfavorable, it appeared extremely doubtful whether an abdominal incision would have been of any particular benefit. There was a well-defined mass to be felt extending from the right toward the left iliac fossa.

Another class of cases to be mentioned is that in which patients have recovered from the immediate effects of rupture and have subsequently presented unmistakable evidence of having suffered from the mishap. The number showing the various phases of having been the subject of such a condition has not been a few. These I merely mention as tending to show that rupture and other accidents may take place and yet be recovered from. Dr. John C. Irish, of Lowell, reported some time since to the Gynecological Society of Boston two cases of extrauterine fetation in which sudden rupture had occurred, in both cases the surroundings and the condition of the patients being so unfavorable it was deemed that operative interference would be in such cases an unwise measure of proceeding. In one of the cases the patient had missed one menstrual period; in the other case the extrauterine pregnancy had advanced two months. In both

cases active palliative treatment was resorted to. The use of opiates, stimulants, and restoratives was followed by such a degree of reaction that abdominal section was considered unnecessary. Dr. Irish, in carrying out the treatment in these two cases, seems to have been strengthened by the fact of his experience in operating for final relief in twelve cases of extra-uterine pregnancy, in which it had been manifest that at some time previously hemorrhage from rupture had taken place and had been accompanied with more or less collapse. The practice of waiting, therefore, in some extreme cases, he felt could not always be considered as inadvisable. If all patients, it may be remarked, who may sustain hemorrhage and shock or great exhaustion resulting from the incidents of ectopic pregnancy, would, without submitting to surgical interference, perish, the duty of the surgeon, when called on in such an emergency, would undoubtedly be always most plain.

In estimating the amount of danger the rupture of the sac or the sudden occurrence of shock may entail, much will have to be taken into consideration as regards the quantity of blood that may have been lost and the probable degree of hemorrhage that is still going on. The loss of only a little blood will sometimes produce apparently as much collapse of the patient as that of a larger quantity. In the lighter grades of hemorrhage the shock is not likely to be so continuous or so profound as it is in cases in which a larger volume has escaped. In the former grade the employment of stimulants is of more avail. Salt solutions can be used with great advantage.

Dr. A. L. Norris, of Cambridge, has reported a case of rupture that terminated fatally. He had waited with the hope that the patient would rally. At the autopsy a large amount of blood was found in the pelvic cavity. In another case of tubal pregnancy occurring in a woman aged 21 years, he did not wait long after the occurrence of the rupture, but had the patient taken to a hospital, where an operation proved successful. The incident of the rupture was accompanied with considerable degree of shock, though the loss of blood was not large.

Dr. George W. Jones, of Cambridge, reported to the society a case of ectopic pregnancy in which great collapse followed rupture of the tube and hemorrhage took place. The case was seen in consultation. He thought, as it was evening when he

was called, it would be best to wait until some reaction had taken place. Though the patient next morning had rallied somewhat, Dr. Jones felt that it was wisest to resort to abdominal section; he then could feel quite distinctly a large mass of exudation low down in the right of the abdominal cavity; it had become very evident that hemorrhage to some extent was still going on. The patient, however, declined to submit to operative measures. A little later, while he was still with the patient, there suddenly took place another collapse, in which the patient within a short time expired. Had Dr. Jones been permitted to operate as soon as he became satisfied that the hemorrhage was not being arrested, he would undoubtedly have had a fair chance of saving the life of the patient.

In a recent discussion of this subject Dr. Henry O. Marcy mentioned a case of rupture in which the shock was so great that the patient died within an hour after its occurrence. He spoke of another case in which the shock and hemorrhage were quite considerable, but the patient recovered nevertheless without resort to operation.

Judging from my own experience, and also from that of my confrères in whose ability, judgment, and sagacity I have high regard, I am satisfied that no hard-and-fast rule alike should be established for the management for all cases of shock or collapse from rupture occurring in ectopic gestation. In some cases, even when the shock is quite profound, the amount of hemorrhage may not be great; and even if it should be, it may not continue long. In such cases much can be successfully effected, as before remarked, by the way of stimulants, opiates, and by the employment of salt solutions. The constitution and condition of the patient should be considered. Perfect quietude should be enjoined. In some cases, no doubt, an attempt to remove the patient to a hospital or place of better situation or convenience may sometimes prove to be an unwise measure of proceeding. The first case mentioned by Dr. Marcy shows how small would have been the chances of accomplishing anything by the way of removal to a better situation or by the aid of operative interference. The case mentioned by Dr. Jones brings out another phase in the consideration, such as the "patient's objecting to operation"; the occurring of another collapse soon after the patient's expression of denial shows that complete

mental as well as bodily rest is a most essential factor of treatment. The operative interference in the second case reported by Dr. Norris, as referred to, seems to have been particularly urged because of the adverse results obtained through milder measures in the first case. In that case it appears that the loss of blood had been considerable. The question naturally arises whether the patient could have really borne the fatigue incident to removal to hospital or the additional shock more or less attendant on a radical surgical measure. Such an ordeal to submit a patient to often brings to the mind of the experienced operator many misgivings. To operate in some cases of this character is not always an easy task, and the results are sometimes far from being satisfactory.

Dr. A. H. Tuttle, of Cambridge, in speaking of this subject, said that he had operated a number of times; in some cases the operation became a most desperate measure. He also says that in almost any case something can in the way of relief be accomplished to arouse the flagging powers of the patient. In some cases it is true that the mass, occurring as the result of hemorrhage, may gradually enlarge and the hemorrhage, continuing, may lead to rapid death. In many cases, nevertheless, the choice of waiting may prove better than that of resorting to immediate operation. It is the quantity of blood lost, and not the character of the shock and other symptoms, that should always be considered in determining what would be the degree of danger to be encountered in a case. These remarks of Dr. Tuttle bear the impress of being the outcome of wisdom born of experience. The results of my first case reported seem to have been obtained by a wise method of proceeding; and though the outcome of the second case was fortunate, it would have undoubtedly been better, had the surroundings been less favorable for operative measures, to have waited and trusted more to stimulants and other palliatives for overcoming the shock and other grave symptoms. The features presented in the two cases as reported by Dr. Irish are most interesting, and the results obtained by the treatment are highly instructive. His experience in operating in the later stages in twelve different cases of extrauterine pregnancy, in which there had been shock and other serious symptoms, and from which the patients had rallied and lived on, served to have impressed him with the

fact that much could be accomplished under unfavorable conditions by waiting and endeavoring to bring about reaction, as he did, as reported, most effectually.

I am not unaware that in the discussion of the subject of rupture or great shock some consideration, it may be urged, should be had in regard to the variety of the ectopic pregnancy. We know that the interstitial form is the most uncommon kind likely to be met with. Perhaps it may be said that in cases of accidents of rupture the hemorrhage occurring may be more easily controlled by operation in the tubal form. When rupture or shock occurs in abdominal pregnancy the implantation of the ovum to the peritoneum may be more difficult to remove. It should not be forgotten, however, that when the surgeon is not called until the occurrence of shock or rupture a differential diagnosis is often far from being easy to make. Especially is it so when it becomes essential to disturb the patient as little as possible in order to prevent further shock and hemorrhage. The object of immediate treatment, of whatever character it may be deemed most expedient to carry out, is to lessen suffering and to save life if possible. The subsequent management is always to be a matter for later consideration. If it becomes reasonably manifest that serious hemorrhage is still going on and that it is not likely to cease, an abdominal section, if the circumstances are such that it can be done with any probable chances of obtaining success, should of course be resorted to at the earliest moment after other measures appear unavailing. If, however, in a time of such an extreme alarm, an operation can be safely dispensed with until conditions more favoring, it would undoubtedly be a far better course to pursue, for it becomes in such cases, as it is in all other abdominal surgery where the work is in danger of being hastily or inconsiderately performed, most unfortunate for a surgeon to open the abdomen and then to discover that he has erred in his diagnosis; this is not only true in the case of a woman who may be a leader or most influential in society, but also in the case of one who may be in the more humble walks in life.

NORMAL INVOLUTION OF THE APPENDIX AS A MATTER OF SURGICAL INTEREST.

By ROBERT T. MORRIS, M.D.,
NEW YORK.

Senn and Ribbert first called attention to the fact that the vermiform appendix normally undergoes an involution process which is marked by a gradual disappearance of the mucous coat, with obliteration of the lumen of the appendix. These cases have received attention in anatomical literature rather than in the literature of surgery; but I wish to show their importance in the field of the surgeon and to state the reasons why we ought to have collective data upon a class of common cases that go the rounds of the medical profession, seeking relief that has not been given very often, because the nature of the cases was not clearly defined in medical literature.

At various times in the past patients were sent to my office for examination because they complained of a sense of discomfort in the appendix region, but with no history of acute attacks. As these patients gave no history of acute infective attacks of the appendix, and as nothing abnormal was discovered on palpation, I dismissed the patients as not presenting surgical cases, and believed that their symptoms of intestinal indigestion and of general malaise were due to some of the common causes that required analysis by the physician.

I remember well one gentleman who was certain that his appendix was at fault, and who had been advised against operation by several authorities, but who was so insistent upon having the appendix removed that he offered a very large fee if any one would do the work for him. He was dismissed with the advice to take a trip around the world and to engage in enterprises which would have a tendency to take him away from the habits

of a valetudinarian. And yet, as I now look back upon the case, he gave a good description of symptoms that may be classified distinctly as belonging to normal involution of the appendix. The patient was undoubtedly an "appendix invalid," but he died of pneumonia some years before I had begun to classify observations for an understanding of this subject.

The first case of normal involution of the appendix that engaged my attention because of its symptoms was in 1895, in a surgeon whose work in appendicitis is well known, and who was convinced that something was wrong with his own appendix, although he had suffered no acute attacks of inflammation of that organ. During the previous four years he had been conscious of an area of discomfort localized in the appendix region, with occasional neuralgia of the ileo-inguinal and ileo-hypogastric nerves. There was no actual pain, and there were at first periods of complete relief; but these became shorter and shorter, until finally the discomfort was so persistent and accompanied by so much intestinal indigestion that he sought relief. His appendix was readily palpable, and, to my touch at that time, seemed to be perfectly normal. There was no local tenderness on pressure, but the abdominal walls were unnaturally resistant. I advised against operation, and expressed the opinion that the symptoms were caused by intestinal fermentation and that the condition called for medical treatment. After some months of careful medical treatment the patient reported that he had received much benefit and that he was better in every way, but there was more or less of the local appendix discomfort at various times during the day, and this increased whenever medical treatment was relaxed, so that the patient preferred to have the appendix placed "where he could look at it." The appendix was about three inches long and presented no external evidence of infection changes. On longitudinal section it was observed that nearly all of the distal half of the appendix had undergone a normal involution process, with obliteration of the lumen and replacement of the lymphoid and mucous layers by connective tissue. The part that showed involution change had a slightly lesser diameter than the part that still possessed a lumen.

I still had doubts about the appendix having been any very important factor in the production of symptoms, but asked Dr. H. T. Brooks to make a report upon microscopical findings. He

reported that in the involution area of the appendix the outer peritoneal covering was normal. The two muscular coats were undergoing a degeneration process. The lymphoid and mucous layers had entirely disappeared, and were replaced by connective tissue. The smaller blood vessels were becoming obliterated, but the nerve filaments persisted, and these were surrounded by groups of new cells in such abundance that there was presumptive evidence of the presence of inflammation of the nerve filaments.

The line of reasoning then included the deduction that the solid replacement tissue was practically scar tissue, and that this scar tissue of the appendix was acting precisely as it does in the scar of an amputated leg when it contracts and irritates nerve filaments that are engaged in the scar tissue. The primary effect of the irritation of nerve filaments by contracting connective tissue in the appendix was presumably the production of a sense of discomfort in the appendix region. A secondary result was probably a sympathetic irritation of Auerbach's and Meissner's plexuses of the walls of the colon and ileum, with resulting loss of function to an extent which allowed intestinal fermentation to take place. A third result would naturally be the chain of phenomena which are commonly associated with the absorption of saprophyte toxins from the bowel.

In this first case of mine, which was typical, and in a patient whose observations were particularly valuable because of his understanding of the whole subject, the treatment by removal of the appendix was completely curative. He has been relieved from all discomfort in the appendix region and from the intestinal fermentation, and is to-day in robust health.

The specimens from similar cases which are here presented illustrate the condition resulting from normal involution of the appendix. In this first specimen the longitudinal section shows almost the entire appendix involved, with very little lumen remaining, and at the cecal end. Involution change begins usually at the distal extremity of the appendix and proceeds toward the cecum regularly; but in some cases, as illustrated in this second specimen, it apparently occurs irregularly, with the production of stricture bands and a narrowing of the lumen of the appendix at one or more points. I am under the impression that the narrowing of the lumen with consequent mucous inclusion, upon which Abbe lays so much stress, is due to such irregular

normal involution as this specimen shows. It has been my belief that appendices undergoing normal involution changes were not apt to be the seat of acute infective processes; but if irregular involution with mucous inclusion occurs, it would be fair to assume that the conditions are favorable for acute infective attacks proceeding from decomposition of incarcerated mucus.

The microscopical specimens here presented are from cross-sections of appendices undergoing the regular form of normal involution, and they show the condition described by Dr. Brooks in the first specimen which he examined.

The symptoms accompanying normal involution of the appendix belong particularly to middle life, although they sometimes become marked as early as the twentieth year. They persist over a series of years, and probably disappear in later life when the appendix has become transformed into a string of looser connective tissue.

In making a differential diagnosis we find, in regular normal involution cases, an appendix which feels harder than normal on palpation. The abdominal muscles are unnaturally resistant, protecting the irritated appendix very much as they do an infected one, but not to such a marked degree. There is a sense of discomfort amounting almost, if not quite, to pain in the appendix region; and while this may be absent for hours or for days at a time, it is persistent in its recurrence. Intestinal fermentation is a characteristic accompaniment of involution irritation of the appendix, and there may be an associated neuralgia of the ileo-inguinal and ileo-hypogastric nerves. There is little or no tenderness on pressure upon the involuting appendix.

In tuberculosis of the appendix we have the same symptoms as in regular normal involution, but there is a marked degree of tenderness on pressure, and the tuberculosis is distinctly progressive in its infection area, with eventual wide involvement of the peritoneum or mucosa of the bowel.

In cases of benign mucous inclusion or of appendix irritation due to torsion or angulation, we have the same symptoms as in regular normal involution, but the attacks are much more acute; they are apt to be associated with nausea or vomiting; and there are longer periods of complete relief.

In cases of hysteria with simulation of the symptoms of appendicitis, we have the collateral neurotic history for guidance.

The treatment for the disturbance caused by regular normal involution of the appendix is treatment for the symptoms only, unless the disturbance is sufficient in degree to call for removal of the appendix. I have a number of these patients under observation, and they have been given to understand that the question of operation is one of comfort rather than one of necessity. The majority of the patients prefer palliative medical treatment, but some of them choose operation. On account of my exhibition of normal involution cases before the class at college, they are sometimes spoken of as "Morris appendices"; but I wish to have them called "scar appendices" instead, for the reason that the former nomenclature has been taken to mean that I favor the removal of normal appendices, and has resulted in unwarranted criticism. I have never, in speaking or in writing, advocated the removal of normal appendices, and I fear that even this article may lead to the removal of some normal appendices at the hands of colleagues who are not quite as careful as I try to be in making a selection of cases. The matter should be left entirely to the patient in cases of disturbance from regular normal involution of the appendix, and our attitude is very different from the one that we are to assume when we are responsible for the outcome of a case of true infective appendicitis that has been entrusted to our care.

NORMAL SALINE SOLUTIONS BEFORE, DURING, AND AFTER ABDOMINAL OPERATIONS.

By WILLIAM H. HUMISTON, M.D.,
CLEVELAND.

In 1895[1] I first published my method of allaying thirst following celiotomy, and again in 1898, in the same periodical, I gave the results of the observation of twenty-four cases in which this method had been used upon the excretion of the kidneys, showing an average of 31½ ounces of urine and 90 per cent of the normal quantity of total solids passed during the first twenty-four hours succeeding celiotomy.

This satisfactory condition was obtained only in those cases in which a sufficient time for preparation could be had prior to operation, and left those usually more grave and disastrous emergency cases without this material aid; and usually at that time recourse to intravenous transfusion or subcutaneous injection was postponed until complications with heart or kidneys had already arisen.

It was not until June of 1897, in a case to be hereinafter detailed, that I used the peritoneal cavity as the inlet to large quantities of salt solution. During the remainder of the year I used in a cautious way this procedure in a few seemingly hopelessly desperate cases, with such satisfactory results that I soon adopted it as a routine.

The technique is simple. After partially closing the wound I pour into the cavity through a glass funnel not less than two quarts of normal saline solution at a temperature of 112° F., and quickly tie the few remaining sutures previously introduced. Within a few minutes the anesthetizer notes a marked change in the character of the pulse, its rate diminishing, lowering ten-

[1]American Journal of Obstetrics.

sion and increasing fulness. The color of the face more nearly approaches the normal, and usually the patients have little or no thirst for the first eighteen hours, have less pain, require no enemata of any kind, and are thus kept absolutely at rest and free from the annoyance of *too much nursing*.

In vaginal celiotomies where this method cannot be employed I begin to have the saline administered subcutaneously; the trocar entering at the junction of the anterior axillary border at a line on a level with the upper border of the right breast, the trocar being plunged downward, backward, and inward, so that the fluid finds the loose tissue in the axilla and backward underneath the scapula rather than under the breast. In this position, with a very little massage, three or four quarts can readily be injected with four feet of pressure. In emergency work outside of hospitals, where assistance is limited and sterile salt solution is not to be had, I have used a hastily-prepared non-sterile salt solution during an operation by allowing the sigmoid and colon to be slowly filled with the fluid. This is easily accomplished when the patient is in the Trendelenburg posture and the peritoneal cavity opened to permit of the ready guidance of the tube above the pelvic brim. Large quantities may be used in this way without hindrance in the field of operation, and the rapidity of absorption can only be appreciated by actual observation.

Another use of the salt solution which I have made of late has certain theoretic, and proven practical, grounds for its adoption. For a number of years I have not flushed the cavity nor used a drain. I do, however, occasionally employ the Mikulicz tampon to control general oozing; and in this latter class I have found that the filling of the peritoneal cavity after the tampon has been placed, tends toward the dissolution of clots and the carrying off of effete material within the pelvis through the capillarity of the tampon.

I have never had a bad result which could be attributed to this use of the saline. There are no certain indications to its use, but, on the other hand, I am certain that many a case of sepsis, of septic nephritis, and of low cardiac vitality has been saved.

CASE I.—June 18, 1897. Mrs. P., aged 50 years, had a tremendously large ovarian cyst, which had become adherent to almost all the structures within the abdominal cavity, excepting

the spleen and the left kidney and the anterior abdominal wall, the latter escaping through the intervention of the omentum. The cyst was a large multilocular one, containing the products of suppuration familiarly known as "peasoup." After the contents had been carefully and slowly withdrawn and the cyst wall freed and removed, the patient suddenly collapsed. During the flushing of the peritoneal cavity the patient recovered slightly, and it gave me the thought to leave some of the fluid to replace the weight which I had removed. Four quarts were used. She was placed in bed in an almost moribund condition, but in a very few minutes the radial pulse was again to be felt. Within an hour the rate could be readily made at 160, and it gradually dropped to 90 within the first twenty-four hours, and the patient made a rapid and uninterrupted recovery.

CASE II.—Mrs. L. J., aged 34 years, had been married sixteen years and had given birth to two children, the youngest being 8 years old. She had two miscarriages prior to the birth of the last child. Her early menstrual history shows no divergence from the normal. In later years she has been troubled with dysmenorrhea and pain in the ovarian region, but her general condition has been excellent. The last menstrual period began on January 18, 1901, and continued throughout the usual length of time, without any deviation from the course of previous epochs. There was no appearance of the menses either in February or March, but a week after the expected period of the latter month the patient "took something." For ten days there was a bloody discharge, but on March 28 the patient had a severe pain in the left groin and was faint and nauseated. At this time a probable diagnosis of gallstones was made, but a second physician decided that a pregnant uterus was misplaced to the left and an abortion was threatened. On April 4 a second and more severe attack occurred, followed by collapse. The patient was then kept in bed till May 12. Two distinct attacks occurred during this period of forced quiet. Pain, nausea, and vomiting with tympanites were the chief symptoms. During one of these attacks one-half grain of morphine was administered before relief came. The bedside record shows with each attack a rise in pulse rate from 80 to 100 and 120, followed in about twelve hours with a rise of temperature from the normal to 100° or 100½°, with rapid declination of pulse rate

and temperature to the normal. The nurse was discharged on May 12 and the patient rapidly improved in general condition. The bloody discharge from the vagina, which had occurred almost continually through the month of April, had ceased.

During the first week of July she came from her home to Cleveland to recuperate. On July 9, at 10 A.M., the fifth distinct attack of pain occurred. At this time the patient sank into collapse. The history and clinical picture made the diagnosis of extrauterine pregnancy with internal hemorrhage positive. Dr. F. S. Clark, who first saw the case, called me to operate. I found the patient in an extremely low condition, with sighing respiration, blanched skin, cold extremities, and small, feeble pulse whose rate was scarcely distinguishable at 170 to 188, temperature 95°. The operation was quickly arranged for at her sister's home. Under anesthesia the diagnosis was confirmed, the body of the uterus being easily distinguished from the large tumor mass, and in the latter fetal parts could be felt to the left and posterior to the uterus. Such, in brief, was the typical course of this case; and now I desire to call your attention to the value and necessity of certain operative procedures.

As soon as partial anesthesia was induced the introduction of salt solution beneath the breast was begun, and when the patient was taken from the table two quarts had been given and most of it had already been absorbed. The placenta was found attached to the posterior surface of the broad ligament and to several coils of small intestine in the cul-de-sac. The posterior wall of the gestation sac was coherent to the colon and small intestines. In the abdominal cavity there were clots, in various stages of organization, representing the different periods of previous ruptures. Ligatures were immediately placed on the ovarian artery, and a clamp applied over the tube and broad ligament along the left side of the uterus. With the checking of the main blood supply the fetus and the various blood clots were removed from the pelvis and the placenta was carefully detached. The posterior wall of the gestation sac was carefully handled with a view to leaving it as a shield for the general abdominal cavity. No attempt was made to clean the general peritoneal cavity, but as much salt solution as the space would contain was poured into it and left when the stitches were tied.

The posterior wall of the gestation sac was sewed to the upper portion of the wound in the abdominal wall, and the cavity of the gestation sac was packed with gauze to control the general oozing.

The patient's condition when first placed upon the table was very precarious, but with the absorption of the salt solution beneath the breast and the use of strychnine sulphate, one-fifth grain, the pulse gradually grew stronger and fuller, and at 4 P.M. was 140 in rate. One-half pint of salt solution was given per rectum every hour, one-thirtieth of strychnine every two hours, and four minims of fluid extract of digitalis each four hours hypodermatically. At 7 P.M. the pulse again began to waver, and again a subcutaneous injection of two quarts of salt solution was given, and at midnight the pulse was 160 and rapidly growing stronger and slower. Twenty-four hours after operation it was 128 and never again went above this point. The stomach was irrigated thirty hours after the operation, and undigested food, with a large amount of raspberry seeds, was removed. The nausea ceased and nothing further complicated convalescence.

The rapidity with which this patient responded to the use of submammary injections of salt solution when the conditions seemed most hopeless, and the ease with which the general peritoneum cared for the blood and clots that were left in the cavity, are the two important facts to be deduced. To one other point must I call your attention: however hazardous seems the attempt, my own conviction is that all of the placenta should be removed in every case. The danger of intoxication or general sepsis from this (usually sloughing) mass is avoided and the convalescence shortened. And, lastly, I have seen many accidents happen because of the early removal of the gauze packing. My own practice is to wait until nature has made a firm wall about it and the granulation tissue which early permeates the gauze has sickened of its work and died.

CASE III.—Mrs. A. G., aged 23 years, came into the hospital with a tentative diagnosis of old ruptured tubal pregnancy with general pelvic peritonitis. She was much reduced in weight and color, having suffered for six months with intermittent abdominal pains, with more or less severe internal hemorrhages. The history rather pointed to intrauterine ges-

tation, with miscarriage followed by a septic peritonitis. At the operation the latter proved to be the correct conclusion. The pelvis was completely filled with enlarged, thickened inflammatory tubes and exudate. The usual landmarks were obliterated and the pelvis was cleared with great difficulty. The rectum was accidentally torn, and it was found necessary to resect about three inches of it, making an end-to-end anastomosis. The patient was given two quarts of saline into the axilla during the operation, with good results, noted in the condition of the pulse. A Mikulicz tampon was placed in the pelvis to control oozing and to protect the rectum at the junction of anastomosis, and two quarts of saline were placed within the abdominal cavity. The greater portion of this was drained through the Mikulicz, the gauze dressing being changed frequently. The patient passed through the first twenty-four hours in fair condition. The pulse, weakening twelve hours after operation, was readily helped by a quart of saline given subcutaneously. From this time the patient steadily improved toward convalescence without an untoward symptom.

The three cases detailed are sufficient to show the range of applicability of this invaluable agent. I have used it in those extreme cases of prolonged pelvic suppuration where the vitality was so low as to preclude the possible hope of recovery; beginning its introduction subcutaneously, after partial anesthesia, and continuing it throughout the operation with the effect to *prevent shock* or seemingly loss of strength, as in many instances the patient left the operating table with a better pulse than at any time noted for days before.

I have given you but the clinical experiences that I have enjoyed in the use of normal saline solution. The theories and speculations in regard to its actions and results must be determined by the laboratory workers. That it has a wide range of applicability I believe all will agree.

CARCINOMA OF THE CERVIX UTERI—SUMMARY REPORT OF THE AUTHOR'S SIXTY-TWO CASES OPERATED UPON BY HYSTERECTOMY. REMARKS.

By L. H. DUNNING, M.D.,
INDIANAPOLIS.

In presenting a report of all the cases of cancer of the cervix uteri operated upon up to the date of the present writing—September 1, 1902—the author desires to state that he has excluded from this list all the cases in which a question arose in his mind as to the diagnosis of carcinoma. All but very few of the cases were examined by competent pathologists and pronounced carcinoma, and those not examined presented unmistakable signs of malignancy, such as pain, hemorrhage, and a fetid discharge with the presence of a neoplasm which was either fungoid or undergoing ulceration. There were in all 62 cases, and of these 18 are known to be alive. There were 5 deaths resulting from the operation, and one died at the end of ten years and three months.

The list has been divided into two groups, the first group including all cases operated upon previous to September 1, 1898, five years ago. In this group there are 30 cases, of which 5 (16⅔ per cent) lived longer than five years. A brief history of these 5 cases is herewith submitted. By this report it will be seen that one lived ten years and three and a half months. One is alive and well at the end of six years and seven months, one at six years and eleven months, one at six years and four and a half months, and one at five years and nine months.

The second group includes those cases operated upon within the last five years. There are 32 cases in this group. Of these, 14

are still living. One is alive four years and four months after operation, one four years and three and a half months, one four years and one and a half months, two three years and ten months, one one year and ten months, one one year and seven and a half months, one one year and six months, one ten months, one nine months, one eight and a half months, one six and a half months, one five months, and one four and a half months.

All of these who have lived over three years have been examined either by myself or attending physician and found to be free from a recurrence. I cannot speak positively of several patients operated recently, other than to say that they do not present at present any symptoms leading to a fear of a recurrence.

In this report all cases are excluded in which we knew portions of the cancerous mass were left behind. In our attempts to do thorough work we sometimes jeopardized other tissues. Once a portion was cut out of the bladder and the opening was successfully sutured. Twice we caused rents in the bladder. One occurred in one of the fatal cases, and in the other case the rent was closed by a subsequent operation before the patient left the hospital. The patient died, however, of a recurrence within six months.

In three cases one ureter was severed. In two of them the corresponding kidney was extirpated. In the first, which occurred in 1893, the prognosis was unfavorable and I knew of no better way of procedure. The patient recovered from both operations, but died three months later of recurrence. In the second case I urged an abdominal section, the dissecting out of the ureter and the grafting of it into the bladder. The patient rejected this method in favor of nephrectomy. The patient is still living and seemingly well at the end of two years and eleven months. In the third case of severed ureter a rapid recurrence took place, the open end of the ureter became blocked by cancerous deposits, a hydronephrosis developed, yet the patient lived many months.

In several patients operated upon there was slight extension of the disease to the vagina. If the vaginal involvement is superficial and not more than one inch below the utero-vaginal junction, it is no bar to hysterectomy.

The author has several times extirpated the upper portion of

the vagina, both by the lower and upper methods. When the work is done through the vagina an incision may be made through the coats of the vagina below the growth, far enough away to enable one to seize with a forceps healthy vaginal tissue. Now, by traction upon the forceps and finger pressure beneath the vagina, between it and the underlying structures, the vagina and neoplasm may be stripped up to the cervix.

In two or three instances I have first severed the vaginal attachment to the uterus and then stripped off portions of the vagina by forceps, traction, and finger pressure from above downward. The former method, however, is the preferable one. The suprapubic method is certainly the preferable one when the uterus and upper portion of the vagina are to be removed.

In all five of the cases that have survived five years and longer the disease was in its incipiency. There were two, however, in the second group—viz., the one alive at the end of four years and three and a half months and the one alive at the end of four years and one and a half months—in which the disease was so far advanced that I deemed it questionable, at the time of examination, whether the operation would be of any avail. The first was an adenocarcinoma of the cervix and the operation a vaginal hysterectomy. In attempting to draw the uterus down the cervix was torn off, so that the operation was greatly embarrassed. The case proved to be one of the most satisfactory in the list.

The other case was one of a large cauliflower growth of the cervix attended by much bleeding, fetid discharges, and marked emaciation. This patient is now enjoying good health without recurrence. These are exceptional cases. In the review of my experience I am greatly impressed with the necessity of early operation, if we desire to benefit the greater number of patients.

Vaginal hysterectomy was the method of operation in all but five cases. In the five cases in which supravaginal hysterectomy was done, a technique very similar to the one proposed by Werder was employed. The pelvic glands were removed in two cases only. One case out of the five was fatal, and in this case the operation was most difficult and quite prolonged. The left ureter was torn off near the bladder.[1] Fortunately the torn end of the

[1] In a recent supravaginal hysterectomy I resorted to a simple method which yielded me such admirable results that I shall employ it in the future whenever possible.

The case operated upon was one of carcinoma of the cervix in which

ureter was found and transplanted into the bladder without difficulty. The result of this implantation we do not know, as the patient died at the end of two days and we were not permitted an autopsy. Only two of the remaining four patients are alive, one six and a half months and one five months after the operation. It seems to me that the question of methods is still an unsettled one.

Certainly the supravaginal operation with extensive dissection of glands and broad ligaments is attended with a larger rate of primary mortality, and the method has not been employed long enough to determine its relative merits in effecting a cure. Theoretically it appears the most promising.

"Leopold's researches show that even at a comparatively early stage of the disease too much reliance cannot be placed on this alleged immunity of dissemination, for of 127 cancerous uteri extirpated per vaginam he found dissemination in the parametrium in 68, or 54 per cent, the disease being limited to the uterus in the other 59 cases." "Mackenrodt has arrived at similar conclusions."[1]

the neoplasm extended well over toward the right lateral pelvic wall, yet it seemed just above the vaginal tissue, and the uterus and neoplasm moved freely, so I thought it possible to easily extirpate the uterus and neoplasm.

After opening the abdomen and working my way down to the neoplasm, the latter was found more extensive than we at first thought. It seemed to me the ureter was in danger. The patient was in the Trendelenburg position, and the intestines held above the pelvic brim by gauze packing. The ureter, as it came over the brim of the pelvis, was in plain view. The peritoneum lying over it was incised a distance of one-half inch. The peritoneum was dissected off the ureter, a blunt needle threaded with catgut was carried under the ureter, and a single knot was carried down to near the ureter, but not tightened.

By slight upward traction it was found to put the ureter on the stretch, so that it could be felt as a cord all the way from the thread encircling it to its entrance into the bladder.

To my satisfaction I thus demonstrated that the neoplasm in the cervix lay below the ureter, and that with a little care there was no danger of wounding it.

When the uterus was extirpated the catgut thread was cut and removed and the incised peritoneum stitched.

It seems to me this simple method could be used with marked advantage in many cases of operation upon neoplasms in the pelvis in which there is danger of wounding the ureter.

[1]Roger Williams: Uterine Tumors, p. 213.

Roger Williams'[1] postmortem findings showed the largest per cent of involvement of vaginal tissue by extension, viz., 72 per cent. These findings lead us to hope for a greater number of cures when a few years more have passed and we can obtain tabulated reports of cases operated upon by the Werder method. Every supravaginal hysterectomy for cancer of the cervix should include in the procedure the removal of a portion of the upper part of the vagina, especially anteriorly, since this is the most frequent direction of the extension.

Vaginal hysterectomy for cancer of the neck of the uterus has yielded me 16⅔ per cent of cures, taking the five-years time test as the standard of computation. This is a percentage corresponding to that obtained at Johns Hopkins, as recorded by Cullen in his work, "Cancer of the Uterus" (pp. 632 and 633). By consulting his table of cases of squamous-celled carcinoma of the cervix uteri, it will be seen that the whole number operated upon five years previous to the time of his report was 14. From this number two should be deducted, as they were incomplete operations. There are thus left 12 cases operated upon, and 2 of these were alive and well at the time of making the report, thus showing a percentage of recovery of 16⅔ per cent.

The number of cures is not a complete index to beneficial results of operations for cancer of the uterus. The prolongation of life in many cases, and the relief of suffering, hemorrhage, and offensive discharges, must pass for much in favor of surgery. The writer's experience teaches him, however, positively the uselessness, the harmfulness of hysterectomy in cases in which there is a wide dissemination of cancerous deposits and infiltrations. He has long since abandoned all efforts in this direction. He has, however, seen much temporary benefit result from curettage and the thorough application of the thermo-cautery.

Of late there has been some discussion upon the relative merits of hysterectomy and high amputation of the cervix in incipient cancer. Several years ago the writer, following the teachings of Schröder, employed high amputation instead of hysterectomy. He abandoned this method because of the incompleteness of the operation, and because of the sufferings of the patients afterward in those operated upon before the menopause. It is probable that

[1] Ibid., p. 224.

amputation yields a slightly less primary mortality than hysterectomy, but the benefits in patients surviving the hysterectomy are much greater.

It should be remembered that in a considerable percentage of cases of cancer of the cervix uteri the body of the uterus is also affected by extension through the lymphatics, and in other instances the disease spreads rapidly from below upward. Obviously amputation of the cervix is inappropriate for such cases. The ovaries and tubes are quite often invaded, even in early cases. Here also amputation is inefficient.

The painful menstruation and pelvic congestion due to stenosis following amputation of the cervix are, as a rule, very distressing and call for frequent intervention of the surgeon. Pregnancy and labor in such cases are distressing and too frequently dangerous.

We operate in cases of cancer to bring relief as well as to accomplish cures. To effect this double purpose hysterectomy is at present the best known means.

REPORT OF FIVE CASES OF CARCINOMA OF THE CERVIX UTERI ALIVE FIVE YEARS AFTER HYSTERECTOMY.

CASE I.—Mrs. A., referred by Dr. Terrill, of Filmore, Ind., in January, 1892. The patient was 63 years old and had reached the menopause ten years previously. For several months she had had profuse uterine hemorrhages. Dr. Terrill had removed small growths from the cervix uteri several times, but new ones had quickly sprung from the site of the former ones. At the time of my examination there was a small cauliflower growth springing from the cervix and protruding into the vagina. A portion of it was examined by Dr. Ferguson and pronounced carcinoma. Vaginal hysterectomy with extirpation of the appendages was done January 4, 1892. The patient recovered. She enjoyed good health until May, 1899, when she had a slight stroke of paralysis. She made a partial recovery from this attack and died March 20, 1902, of hydrothorax. No postmortem was made. There were never any evidences of a recurrence of the carcinoma in the pelvic tissues.

CASE II.—Mrs. B., married and aged 30 years, was referred by Dr. J. R. Mauk, Cambridge City. She was emaciated as a result

of uterine pain and hemorrhage. A neoplasm was found involving the cervix uteri. Dr. C. E. Ferguson examined a portion of the neoplasm and pronounced it carcinoma. A total extirpation of the uterus and appendages was effected January 30, 1896. The patient recovered from the operation and gradually regained her health. She enjoys reasonably good health and has for a number of years been employed as a stenographer. She has not been examined by me recently, but she makes no complaint indicating a recurrence.

CASE III.—Mrs. C., referred by Dr. McNutt, of Connersville, Ind. She was 45 years of age. Examined by me December 2, 1896. She gave the history of frequent and profuse hemorrhages and now has a thin, fetid discharge. Upon examination a small papillomatous growth was found upon the posterior lip of the cervix. A piece was snipped out and examined microscopically and pronounced carcinoma. Vaginal hysterectomy was done December 3, 1896. The uterine appendages were also removed. She made an excellent recovery and to-day is well. I have examined her recently and find no evidences of recurrence.

CASE IV.—Mrs. D., referred by Dr. H. Jameson. The patient was 48 years of age, mother of four children, youngest 17 years. A neoplasm involving one-half of the circumference of the cervix uteri was found upon examination. Microscopic examination showed it to be a squamous-celled carcinoma. Hysterectomy was done April 16, 1896. Patient made an excellent recovery. She reported to me by letter August 16, 1902, as being well and as having no signs of recurrence.

CASE V.—Mrs. E., about 40 years of age. Referred by Dr. E. F. Hodges. Patient married and mother of two children. Microscopical examination of cervical neoplasm was made by Dr. Hodges, who pronounced it carcinoma. A vaginal hysterectomy was done October, 1895. Patient was in ill health for some months following the operation. She has been in comparatively good health now several years. The writer examined the patient in July of this year and found a clean vagina with no signs of recurrence.

ETIOLOGY AND PROPHYLAXIS OF LESIONS OF THE FEMALE PELVIC TRACT FOLLOWING LABOR.

By EDWARD J. ILL, M.D.,
NEWARK.

In presenting this subject for your consideration I am guided by the desire to draw your attention, and beg for a free discussion, to a subject which, though of great importance, is spoken of but lightly in most works. Many a life is made miserable beyond repair by such trauma, and unfortunately many a practitioner is the cause.

As the paper was being written I found that the subject could not be dealt with as fully as I desired in the short time allotted to it. You will therefore pardon me if some important and interesting parts thereof are simply mentioned.

Years ago, when a student in attendance upon the lectures and clinics of Gaillard Thomas, I was much impressed by the remark that many cases presenting themselves at the clinic dated their illness from a certain labor. I am unable to say in what proportion of all cases this is true, but the last five hundred records of my case book show it to be about twenty-five per cent. It seems to me that this is an extraordinarily large number of accidents to result from a physiological act. In my earlier days I used to wonder whether women living in less civilized communities suffered in the same way. Later while living among the Mexican Indians I found them with the same injuries.

In considering the subject we will ask ourselves:

1. What are these accidents?
2. What predisposes the women to them?
3. How are they produced?
4. How can we avoid them?
5. What is the result?

When we speak of traumatism following labor most of us will think of two sets of injuries, namely, the cervical and perineal lacerations. While these are the ordinary and by far the most frequent, interesting, and avoidable, we have various degrees of laceration of the vagina, the labia minora and majora, the vestibule, the bladder, the rectum, the ureter, and the urethra, besides rupture of the uterus and sloughing of the cellular tissue in various parts of the tract. Next to these we must think of the bony structure of the pelvis and its ligaments. Then we have also injuries produced by ignorance, want of skill, or misapprehension, such as inversion of the uterus, removal of the intestine, and the like.

Perineal laceration, commonly called relaxation of the vaginal outlet, occurs, in the vast majority of cases, to one or other side of the median line. The injury begins at the frenulum and forks upward, backward, and outward. Most frequently we find it in the right posterior wall, more rarely to the left in the vagina. This is often combined with slighter lacerations on the left and right anterior portion, usually following in the passage of the greater diameter of the head. In considering this subject we must not forget the submucous laceration. The levator ani, the transversus perinei, and the deep pelvic fascia suffer most frequently from this source. At times we find no scar in the vagina at all.

One of the most serious conditions is when the neck of the bladder has been separated from its attachments to the pubes, thus predisposing to its prolapse.

When the laceration extends into the rectum we have the so-called complete perineal laceration. Fortunately this is a condition that can be remedied by one of the nicest operations in plastic surgery.

There are some forms of perineal lacerations accompanied by so much atrophy of the tissue that their restoration proves an impossibility. In these cases sloughs have formed as a result of labor.

Laceration of the vagina into the rectum above the perineum is rare. I have seen but one case, where the laceration began two centimetres below the cervix and ended just above the perineum. The patient was 40 years old and a primipara. Neither the cervix nor the perineum was injured.

.Time does not permit me to speak of injuries to the bladder, ureter, and urethra.

Rupture of the uterus should occupy our attention for a moment. It occurs more frequently than is ordinarily supposed, and should be spoken of when we discuss the question, "How are these injuries produced?"

Lastly we should speak of the injuries to the bony structure and ligaments of the pelvis. While fracture of the pelvis has been recorded, it is most likely due to a diseased condition of the bone and very unskilful handling. The same can be said of the ligaments. When an exceptionally large head is dragged through the pelvis we may have a separation of the pubic bones at their junction.

PREDISPOSING CAUSES.—Predisposing causes are not always easily made out, but their study is of the greatest importance, and a knowledge of them will at least foretell the danger, even if it does not succeed in preventing the injury. At times these accidents occur in women in whom we least expect trouble. At other times we look forward to their occurrence with certainty and then only dread the extent. While women in good health, who have been directed to a proper exercise of their muscular, urinary, intestinal, and cutaneous functions, will rarely be subjects for extensive injuries, such may occur as unlooked-for accidents. The sluggish woman with poorly nourished body and poorly developed muscular and osseous system is more apt to suffer.

(*a*) The *condition of the soft parts of the mother* must be studied, as they suffer from diseases previous to impregnation and from conditions as produced during labor. Among the former we must class those cases that have suffered for years from chronic catarrhal endocervicitis with ectropium, causing an induration of the cervix. They are usually of a scrofulous habit, have been raised on pies, biscuits, bread, and tea. Physically they have always been of a sluggish habit, great readers of sensational novels, and are of excitable temperament. Now and then we find an abnormally small vagina, either congenital or caused by previous trauma. Scars of such character become serious obstacles to the expulsion of the fetus and cause further injuries. We must also consider the result of operations on the soft parts—*i. e.*, the cervix, vagina, and perineum. As a rule no difficulty is experienced if there is a normal amount of scar tissue. This is

quite different when such scar tissue is produced by tightening the sutures to such a degree that they have cut into or through the tissue. Varicosities and condylomata should not be overlooked. Narrow, high, and non-elastic perineum should be thought of in this respect, especially in the old primipara.

The conditions produced during labor are mainly dryness of the parts, occasioned by premature rupture of the membranes, and tedious labor.

(*b*) *Conditions of the bony pelvis* should next occupy our attention. The woman with a deformed pelvis is the subject of most unavoidable accidents. Such conditions are often not looked for until labor has progressed. Here we most frequently see the pelvis too small in all of its diameters. The rachitic pelvis predisposes to severe injuries because of the slowness with which the head enters the inlet and the rapidity with which it is forced through the outlet, not giving the parts a chance to relax. The flat sacrum is often the cause of as much injury as is a high, narrow symphysis. It would lead me too far to speak of the various other deformities and the abnormal inclinations of the pelvis.

(c) Of the abnormal conditions of the fetus the relatively large head should occupy our attention first. We frequently find that small women have large children with large and hard heads. The relative proportions of the fetal head and the bony pelvis cannot be too closely observed wherever there is the slightest danger. In fact, our attention should be drawn to this at our first visit in a confinement case. Not infrequently severe injuries are caused by excessive size of the fetal shoulder. You have all, no doubt, congratulated yourselves upon the successful delivery of the head when severe injuries followed the exit of the shoulder.

(*d*) We must furthermore speak of the *abnormal presentation* of the fetus. It is well to know that normal presentations, when they produce lacerations, do so, as a rule, in the greatest diameter of the head or shoulder. A possible cause may be the passage of the greatest diameter of the child's head. Of the abnormal presentations, the occipito-posterior, the face, brow, arm, and shoulder are of the greatest importance. This becomes the more so if the patient is a primipara and the birth a dry one.

It only remains for me to draw your attention, under this head,

to the injuries produced by the transverse exit of the head from the vulva as a possible cause of injury.

(*e*) Under abnormalities *occurring during the progress of labor,* the most common is the early rupture of the membranes. The obstetrician is often to blame. While early rupture at times speeds the birth of the child, it is often the cause of a very serious tedious labor. Our examinations should be conducted so as not to injure the membrane. Imperfect flexions and extensions are causes not so often recognized as they should be.

Tonic contraction of the uterus and precipitate labor are fruitful sources of injury to the soft parts.

(*f*) *Operative interference* causes the most frequent and by far the most serious injuries. Premature interference, whether necessary to save the life of the mother or when unnecessary—that is, for the convenience of the doctor—produces the most extensive injuries.

(*g*) Lastly, we have the *position of the mother during the birth of the child.* Children born while the mother is in a standing position are sure to produce injuries, most likely because of the great contraction of the uterus, the rapid expulsion of the child, and the slight inclination of the pelvis in that position.

HOW THE INJURIES ARE PRODUCED will be best understood by what has just been said. Additional explanation will serve to elucidate this matter. If we know what produces these we can easily avoid many.

The severe injuries are those produced by:

(*a*) *Too rapid extraction* of the fetus. When the soft parts are in normal condition this error in technique will produce comparatively little injury. When the soft parts are not properly prepared, or when dry labor has supervened, the injuries are most severe.

The indications for instrumental or forced delivery must be very closely drawn before one should attempt the extraction of the fetus before the cervix has retracted over the head. A dilatable cervix alone is not sufficient. There is rarely enough stress laid upon this very important consideration.

While laceration of the cervix most frequently occurs in the location of the greatest diameter of the head, instrumental delivery in a cervix *not retracted* will produce a laceration in almost any direction. The same can be said of manual dilatation of

the cervix. Both operations should be avoided and considered dangerous. Though cases occur when they become a necessity to save life, I can only repeat what I have already said, that the indications should be closely drawn. When we come to speak of the results of these injuries we will understand the importance of what has been said.

(b) Podalic version is no infrequent cause of injuries. Many times we hear of version being accomplished when the forceps was used in vain and death resulted in two or three days. If autopsies were made oftener the obstetrician would frequently find lacerations of the lower segment of the uterus, reaching into the broad ligament under the peritoneum or even into the peritoneal cavity, which were never suspected at the time of the operation. Usually the head has been pushed out through the rent into the peritoneal cavity.

How Can We Avoid These Injuries?—There is probably no subject in the whole line of obstetrics upon which so much has been written, so little accomplished, and where there is so much to learn as on the prevention of perineal lacerations. Old and discarded methods have been reinvented and rediscarded. Thus I have in my possession some sixty articles on the prevention of perineal lacerations. Some of the injuries spoken of are unavoidable and we must therefore beware of slurring a fellow-practitioner, for what has happened to him to-day will occur in our own hands to-morrow.

In the occipito-anterior position it is of the very greatest importance that the nape of the neck be well under the pubes before the forehead is allowed to glide over the perineum. To insure this I have often made pressure on the perineum between the anus and coccyx. I would abstain from all rectal manipulations for this purpose, as I should not only fear injury to this organ, but also septic infection. At times I would advise to push the soft parts of the mother, anterior to the head, under the pubes and thus favor the birth of the occiput. The patient should be directed to cease all voluntary efforts at expulsion. This is much helped by talking sharply to the patient and by delivery in the lateral-prone position, as the activity of the abdominal muscles is thereby lessened to a marked degree. Elevation of the lumbar region, when the patient is on her back, so as to increase the inclination of the pelvis, is strongly recommended by that master

of obstetrics, Prof. Schultze, of Jena. The occipito-posterior position presents almost unlimited chances for destruction of the soft parts at the outlet. The careful obstetrician can, in a majority of cases, avoid this position by early assistance, rotating the head so that the occiput will turn forward. Some fifteen years ago I presented this particular subject to the Essex County Society of New Jersey and advised rotating by pressure with two fingers, or, if that proves unsuccessful, with the forceps. Slow dilatation is of immense importance in avoiding perineal as well as cervical lacerations.

As many perineal lacerations are produced by the shoulder, it is important to guard that structure by lifting the head forward over the pubes and delivering the posterior arm first, while the anterior shoulder rests behind and above the pubes. If this cannot be done it will be wise to give the shoulder a more transverse position, so as to prevent the sharp edge of the shoulder from plowing up the perineum. In exceptional cases where it is found that the anterior shoulder is born first, it will be wise to retard the posterior shoulder until the anterior arm has been born, thus reducing to a marked degree the diameter of this part of the fetus as it dilates the vulva.

When I spoke of separating the neck of the bladder from its attachments to the pubes, I had in mind the frequency with which the head is dragged against the pubes instead of in a downward and backward direction. As a rule I find that too many physicians pull at the forceps in a direction horizontal to the patient during the early stage of a forceps delivery. The dragging forceps should be directed backward, to be lifted forward as the curve of the pubes indicates and as the occiput slides over the pubes.

I now wish to speak of the AVOIDANCE of those injuries which have prompted the preparation of this paper. I have reference to those extensive lacerations of the cervix, base of the broad ligament, vagina, and perineum which have already been touched upon when I spoke of the application of the forceps in an *undilated* and *non-retracted* cervix. We must first bear in mind that the operation is an exceedingly serious one, and that the avoidance of the injury lies in the fact that it must never be undertaken unless the indication is a most important one. When we are forced to it the prognosis should be a guarded one and

every means exhausted at a normal dilatation and retraction. At times it will be wise to incise the anterior or lateral lips of the cervix. If we can assure ourselves of the death of the child, craniotomy should be the choice. It will be wiser to do a Cesarean section than to force the forceps through an undilated cervix. The chances for the mother and child are better; especially is this the case when we consider the mother's future health. Manual dilatation often means nothing more than many and deep lacerations of the tissue. Podalic version has rarely, in my experience, improved the condition, and the likelihood of a dead child is much greater.

Lastly, we come to speak of the RESULTS OF THESE INJURIES. We must divide this subject into two parts, the immediate and the remote. The immediate is summed up by the likelihood of sepsis. The remote results are of the greatest importance and deserve our closest study. They are keeping the gynecologist busy. Too much stress cannot be laid upon the seriousness of some of these injuries, especially those produced by the forceps on the *unretracted cervix*. Some of the patients remain invalids for years, others never regain their health. The latter cases are those where there is great destruction of the cellular tissue in the base of the broad ligament and beneath the vagina. I can assure you that this condition is much more frequent than is ordinarily supposed and very serious to the well-being of the individual. Those who have been visitors at my clinics know how easily I can foretell from the injuries the character of the labor the patient has undergone. When we examine the woman months afterward we find in the severe cases such a condition as this: the vulva gaps. There is hard, sclerosed tissue about the perineum and on both sides of the posterior wall of the vagina. The vagina seems short and small, its walls hard, rigid, and fixed, and the mucous membrane thin and atrophied. A scar extends from the lacerated perineum up along one or the other side of the vagina to the cervix. This scar often fixes the vagina to the pelvic bones. It extends into the cervix, which is drawn far to the side affected by the atrophic cellular tissue at the base of the broad ligament. The cervix itself will be found gaping. The laceration extends high up into the cervix, on one or both sides, so much so that no uterine tissue is felt in the angle of the gap.

The history of such a case is usually as follows: the patient

is a primipara; was in labor but a few hours, possibly eighteen or twenty hours; the membranes have been ruptured early or ruptured spontaneously. Contractile pains have not been severe, but it was thought wise to terminate labor and forceps was applied with difficulty. It is now discovered by the accoucheur that he has a very severe case on hand and he calls in a friend to help him out. There was an early, abundant flow of blood from the vagina. Vigorous and alternate activity on the part of the obstetricians results in delivery of what is found to be a stillbirth. If the mother avoids sepsis she is fortunate. She is never well again. No operation or set of operations will help her. After years of suffering some few regain fair health.

With the woman who has been so unfortunate as to have a separation of bones at the symphysis pubis, loss of the power of locomotion for want of fixation of the pelvis is the predominant symptom. It has been my good fortune to see several such cases, and I always considered it quite pathognomonic to find the patient supporting her trunk with the hands resting on the thighs. This has invariably led me to look for the depression in the symphysis. The women have all eventually regained their health. The old authors have recognized this difficulty and considered it a serious injury.

The object of my paper has been to draw your attention to the one particular and most mischievous injury, and if that has been accomplished my endeavor has been of some use to you. It is the danger of applying the forceps to the head before retraction of the cervix.

CAUSES OF RECURRENCE OF BILIARY SYMPTOMS AFTER CHOLECYSTOTOMY.

By CHARLES S. HAMILTON, M.D.,
COLUMBUS.

THE majority of surgeons who have had experience with the surgery of the biliary passages have doubtless witnessed recurrence of symptoms of biliary disease after removal of stones from the gall-bladder. Such recurrences may take the following forms: 1. Attacks of typical gallstone colic, presumptively due to the passage of calculi or their temporary lodgment in the cystic duct. 2. Less painful paroxysms, apparently due to the presence of acute or subacute cholecystitis or cholangitis. 3. The recurrence of distended gall-bladder with more or less pain after the thorough evacuation of stones from that viscus. 4. Disturbance (gastric or intestinal) due to adhesions involving the gall-bladder and other viscera. Such apparent relapses are worthy of close investigation, as they imply occasional shortcomings in operative technique and lessen somewhat the degree of confidence with which we may recommend surgical intervention as a means of complete and permanent relief to the sufferer.

A series of causes may be regarded as responsible for such recurrences. Among them I would enumerate the following:

1. A stone may be overlooked in some part of the biliary tubes. While this does not occur so readily in the gall-bladder or cystic duct, it is not infrequent in the common or hepatic duct. In fact, a stone may be felt in either of the latter two, and slip from the operator's grasp, not being again detected during the operation. As our familiarity with the disease and its operative treatment is enlarged by experience, stones will more rarely escape the hand of the surgeon.

2. There seems to be no reason why a gallstone should not occasionally re-form in the biliary tract, after even the most thorough operation, provided conditions favorable to the process are present and that a sufficient time may elapse. However this may be, there is substantial ground for believing that they may re-form if a suitable nucleus be provided. Such might be, for example, a silk suture (Kehr) which had been used in attaching the gall-bladder to the peritoneum. It is hardly likely that all such sutures would find their way into the cavity of that organ; occasionally, however, they do. The propriety of using catgut for this suture is therefore self-evident, as being safer, so far as the future of the patient is concerned, than silk.

3. Stricture of the cystic, possibly of the common, duct may produce return of symptoms after a temporarily successful operation. A calculus which has lain embedded for months or years in the cystic duct may have destroyed the mucosa, and have so thickened the walls of the tube that after its removal partial or total impairment of its calibre results.

4. In some instances of greatly thickened gall-bladder from subacute and chronic cholecystitis, it would seem as though drainage for any reasonable period would not cure. In many such cases I believe that recurrence would be observed if the later history were known. Possibly bacteria remain embedded in the walls of the gall-bladder, becoming active and producing recurrent attacks of inflammation, or the organ has been too badly damaged to perform painlessly its function of alternate expansion and contraction.

5. Adhesions which distort the biliary passages are a frequent source of pain both before and after operative procedures. That they should not form after surgical intervention implies (1) gentle handling of structures; (2) the avoidance of strong antiseptic solutions as well as absolute asepsis in operating; (3) exclusion from the field of operation, by proper padding, of all structures not directly involved.

In this connection attention may be drawn to the proper method of attaching the gall-bladder to the parietes. It is very generally known that the organ should not be attached to the skin, but rather to the peritoneum and deeper muscular layers, because of the lessened tendency to persistent fistula thus secured.

When the liver is greatly enlarged in a downward direction, the gall-bladder should be attached to the parietes as high up as possible, the liver being even pushed upward to some extent to permit this. Otherwise, as the liver diminishes in size from removal of the cause of enlargement, the elongated gall-bladder is subjected to more and more tension, together with a degree of angulation. Both of these factors are likely to produce painful symptoms.

6. Last, unrecognized pancreatitis with secondary biliary disturbance (semi-obstructions and infections) must be an occasional cause of recurrence. In some instances such conditions could be relieved only by cholecystenterostomy, if gall-bladder drainage had failed.

So far as I have been able to follow up my cases and those of my colleague, recurrence of symptoms is not infrequent. Fortunately, in the majority of instances the secondary symptoms are transitory and comparatively insignificant. That they are not always so I am sure current literature sufficiently demonstrates. Accurate knowledge of their nature, as shown by secondary operations, generally suggests the means by which they are to be avoided. It is interesting to note in this connection Kehr's statement that he is always glad to have his cases undergo a Carlsbad cure after operation, if time and means permit. Further, the study of these cases shows strikingly that many of them would have been avoided by primary cholecystectomy, thus justifying the growing tendency to perform that operation more frequently.

Generally speaking, it is evident that the earlier the operation, the less complicated the surgical condition with which we have to deal, and also the less the chance of recurrence of symptoms.

In conclusion I shall detail the history of an illustrative case.

Mrs. M. was first seen in August, 1898. She had had pain in the right side of the abdomen when seven months pregnant three years ago. She suffered in the same way during the puerperium, and from that time up to the present has had a similar pain occasionally. In connection with a miscarriage in August last a swelling was observed in the region of the appendix. She is a well-nourished woman of 27 years; menstruates regularly

and normally. Examination shows normal uterus and appendages; tenderness on the right side of the abdomen in the inguinal and hypochondriac regions; no tumor can be defined. Diagnosis uncertain.

Operation under ether. Incision through the right rectus. Appendix and pelvic organs found normal. The gall-bladder is felt at a surprisingly low position and is much distended. The incision is enlarged and the contents (clear mucoid, five ounces) evacuated. Two stones of mulberry appearance are at once felt and withdrawn. Two more stones are found in the cystic duct; they cannot be forced bodily into the gall-bladder and are therefore broken up by the curette and forceps and removed piecemeal. Directly after their removal bile escapes freely. Close observation of the cystic duct in the region in which the stones have been lodged shows extensive destruction of the mucous membrane, so much so that the possibility of occlusion of the duct at a later period was considered. Convalescence from the operation was uneventful.

The patient returned to her home well, but within three months began to suffer the old pain, and on examination the gall-bladder was found to be again distended; somewhat later it discharged spontaneously through the scar. The discharge consisted of clear mucus and was never bile-stained. It was evidently the secretion of the mucous glands of the gall-bladder. The sinus thus established persisted until the date of the second operation, two and one-half years later. At the second operation the gall-bladder was found atrophied, buried in adhesions, and terminating in a stricture of the cystic duct at the point where the stone had originally been lodged. The mucosa of the gall-bladder was enucleated down to the point of stricture, the presence of adhesions rendering complete removal of the gall-bladder too difficult. The recovery of the patient from operation was prompt and she has been entirely well since that time.

MANAGEMENT OF BREECH PRESENTATIONS.

By WILLIAM D. PORTER, M.D.,
CINCINNATI.

Breech presentation is encountered once in about fifty cases of labor. A much higher ratio represents its pro rata agency in inflicting damage on the mother, in causing injuries to the child, and particularly in the production of fetal mortality. The mortality is variously estimated at from 10 to 35 per cent. The percentage of children that die in the twenty-four hours succeeding birth is also high. It is difficult to determine what proportion of the deaths is due to the presentation *per se*. Many of the labors are premature. A change from breech to head presentation occurs late in some pregnancies. In case of premature labor with breech presentation, dystocia incident to the presentation may cause death of the child. It may be due wholly to the premature labor, which anticipated a possible change to a vertex presentation. But it must be admitted that the presentation may cause the premature labor. The breech seldom enters the pelvis in advance of labor, which may be precipitated from lack of space. The principle is the same as that which explains the frequency of premature labors in cases of contracted pelves.

Primiparity is an important factor of fetal mortality. The abdominal wall admits of less distention, making premature labor more probable. The soft parts dilate less readily. The vagina is less capacious. These conditions increase the difficulty both of labor and of manipulations, should the latter be needed.

Breech cases always require careful supervision and frequently there is urgent need of assistance. On the contrary, it is equally true that defective judgment as to whether interference

is needed, and inferior skill in rendering aid, contribute in an unfortunate degree to the fetal mortality.

Breech cases are usually tedious. The position of the child is generally oblique. Its pelvis, held by the comparatively rigid portion of the spinal column, does not readily accommodate itself to the resultant of forces, as does the head under like conditions. Consequently the breech is likely to impinge against the brim near the anterior end of an oblique diameter. Much time and energy may be consumed in overcoming this obstacle.

The child's thighs are usually flexed. That the breech may engage, this flexion must be carried to an extreme degree. This is opposed by the resiliency of the tissues, reinforced doubtless by resistance on the part of the voluntary muscles. At a definite point in the labor the uterine efforts are expended in crowding the breech into the brim against this resistance. Promptly on the cessation of the pain the extension of the thighs lifts the breech out of the pelvis. The next pain is expended in doing the same work, which is as promptly undone. This seesaw will continue until finally the breech is driven so deep into the pelvis that the thighs are parallel with the body, and efforts at extension only serve to fix the breech more firmly.

The progress of the breech through the pelvis is necessarily slow. However, by the time the outlet is reached the distention of the vagina and vulva is so great that the reflexes stimulate the expulsive powers to their greatest effort. The reflexes are greater than when the head presents, owing to the greater mass within the vagina. Expulsive efforts of such power and rapidity are produced that the child is likely to be rapidly expelled, reducing its time of greatest peril to a minimum.

Serious delay in a breech case is likely to be at one of three points:

1. With the breech at the brim.
2. With the breech in the pelvis.
3. With the delivery of the head.

Delay of the breech at the brim may become a serious matter, particularly if the membranes are ruptured. The water readily escapes, and retraction of the uterine walls may occur to a degree sufficient to embarrass the utero-placental circulation. This is always a cause for apprehension, and particularly

so in breech cases. For there comes a time when this circulation is suspended, owing to the compression of the cord by the chest and head as they pass through the pelvis. The ability to meet this ordeal depends largely on how well the blood is oxygenated before the ordeal begins. The principle is well exemplified in divers who give exhibitions which involve remaining under water for a comparatively long time. It is noticeable that, before undertaking such a feat, the blood is well oxygenated by a number of deep rapid respirations.

With the breech delayed at the superior strait, the usual teaching is to bring down one or both legs and make traction. This plan is excellent if the patient be a multipara and the cervix well dilated or easily dilatable. In case of a primipara, or of a multipara with the cervix imperfectly dilated and with evidence that the completion of the dilatation will require considerable force, it is a questionable procedure. With one or both legs in advance a wedge is formed whose sides taper so gradually as to form a powerful dilator. But its maximum diameter is insufficient to prepare the soft parts for the prompt passage of the head. If the resistance of the cervix is considerable, it will promptly contract when the shoulders have passed, and may cause a fatal delay of the head or a serious laceration of the cervix. Should the perineum form the chief resistance, the delivery of the head within a safe time limit will probably result in an extensive tear of the perineum and possibly of the vagina.

If greater dilatation can be safely secured before the head reaches the pelvis, there will be a manifest gain of possibly vital importance. Such a gain is inevitable if the thighs be allowed to remain flexed and the legs extended along the body of the child. If the breech is carried through the cervix and over the perineum, with the legs in this position, the dilatation is generally sufficient to permit the ready extraction of the head. Considerably more time is consumed by this plan than is needed if the legs are brought down. If interference has not been too long delayed this extra time is well spent. Minutes spent in extricating the head count for more than hours expended in bringing down the doubled breech. The cervix dilated in the slower manner, by the larger mass, is not so likely to contract

about the child's neck. It would doubtless be better to do nothing in preference to bringing down the legs, though such an election would often be but the choosing of the lesser evil.

William Hunter, whose contemporary fame equalled that of his brother, the great John Hunter, was an able obstetrician and a noted teacher. At one time he advised bringing down the legs in the condition under discussion. He reasoned that by lessening the mass the dilatation would be easier and more gradual, and that the suffering of the woman would thereby be greatly lessened. In his later lectures he admitted the danger of his plan and advised strongly against it. In nearly every case in which he had brought down the legs he lost the child.

The best method of bringing down the doubled breech is to make traction over the anterior groin with a finger. In case of a multipara this is easily accomplished, particularly if only moderate traction is needed. If traction in this manner is not feasible or is inadequate, a broad tape or a handkerchief carried between the anterior thigh and the body of the child furnishes an efficient means of traction.

The objection is made that it is sometimes difficult to place the fillet in position. It is no more, or but little more, difficult than to bring down a leg. In placing the fillet the Trush forceps will be found a valuable instrument. The objection that injury has been done with the fillet is applicable to all obstetrical instruments and manipulations. If traction be made in the proper direction the force is expended largely on the pelvis rather than on the femur. Moderate traction in conjunction with the pains will, as a rule, insure gradual descent.

Delay may occur with the breech in the pelvis. Almost invariably the thighs are flexed. The mass is about as great as the pelvis can accommodate. It does not readily bend and adjust itself to the pelvic curves. This is partly due to the resistance of the inflexible thighs. Uterine inertia from exhaustion is also a possible cause of delay.

Robert Barnes taught[1] that delay, with the breech low, often gave rise to serious difficulty. He advised against direct traction on the breech in all cases, claiming that it is frequently unsuccessful, and if so does harm. His treatment was always

[1] Obstetric Operations.

to bring down a leg. This procedure he terms breaking up or decomposing the obstructing wedge. With the breech low in the pelvis it is difficult to bring down a leg. And notwithstanding the high authority, it would seem to be unnecessary.

The use of forceps on the breech is advocated by men of recognized ability. If only slight traction be needed they are doubtless safe and satisfactory. They are so poorly adapted to the shape of the pelvis that it is difficult to regard them as appropriate in cases demanding much assistance. Traction on the groin with the finger, or, if necessary, with the fillet, seldom fails to overcome the delay.

As the body of the child is delivered it should be enveloped in a warm towel. This insures a secure grasp, conserves the child's heat, and lessens the danger of premature efforts at respiration.

As the body is extracted it is well to remember that the shoulders should enter an oblique diameter of the pelvis. To keep the spinal column directly under the pubic arch, as is pictured in many of the text books, is to force the shoulders to enter the transverse diameter, with the not remote danger of fracturing a clavicle.

Among the various procedures for delivering the after-coming head, that known as the Deventer method has the sanction of good authority. With the woman in the lithotomy position, as soon as the shoulders appear traction vertically downward is made, one hand grasping the feet and the other making traction over the shoulders. The arms are undisturbed and are usually found placed along the sides of the head. The claim that by this method the head is delivered in full extension is hardly credible. The normal position of the head is that of flexion, due to the pronounced curve of the spinal column of the child *in utero*. In this position of flexion the head will in all probability enter the pelvis, unless extended by awkward efforts at suprapubic pressure. The explanation of Reynolds[1] that the chin is arrested on the pelvic floor, causing the head to become extended, is not tenable. It may be stated as an inflexible law that, *with the head in the pelvis, a change from flexion to extension or from extension to flexion is a physical impossibility.*

[1]American Text Book of Obstetrics.

The so-called Prague method, but which Parvin attributes to Puzos, involves traction by the feet and shoulders, first downward and backward till the head enters the pelvis; then upward and forward, bringing the back toward the mother's abdomen as the head is delivered.

"The combined method" seeks to diminish traction on the neck and to insure flexion by pressing two fingers against the superior maxilla. This method is variously attributed to Smellie, to Veit, and to Mauriceau. Others claim to effect the same results by traction on the inferior maxilla with one or two fingers in the mouth.

Pressure over the fundus is a most valuable adjunct, whatever method be selected.

A matter of great moment is the amount of traction which can safely be exerted through the neck. This is estimated by Matthews Duncan, from experimental data, to be about 105 pounds. Goodell, from clinical experience, placed the estimate still higher. I have seen fatal injuries to the soft structures of the neck with much less traction than the estimates above given. Where such tremendous force is necessary the forceps is certainly safer and its application is a matter of seconds. For even with an obstruction at the brim, we must remember that most of the head enters the pelvis before resistance is encountered. In this condition the application of forceps is easy.

The method of delivering the head which I have found most satisfactory (though it has no original features) is as follows: after delivery of the breech, bring down the legs and grasp them, enveloped in a towel, with the left hand, making traction. Make pressure over the fundus with the right hand. The importance of this pressure cannot be overestimated. To get the best results from such pressure the woman should be anesthetized. When the shoulders appear the arms should be swept down over the face. As the head enters the pelvis it should be crowded down with the hand, keeping the pelvic curve in mind. If additional force is needed an assistant may make pressure over the fundus. Ordinarily the pressure and traction can be better timed and regulated by one person than by two. Moreover, the proper axis in which to make traction can

be more accurately determined with this bimanual method. And, with all respect for the opinions of those who attribute failure to the lack of sufficient flexion, it appears more rational to explain it by traction in a wrong axis.

The possibility of a large head or of a pelvic contraction should be anticipated by having the forceps always in readiness. If there is reason to believe that great traction will be necessary, the patient should be placed on a table of good height. The advantage of occupying a seat lower than the hips of the patient is equalled only by the satisfaction of having a firm, unyielding support for the hips. With the hips on an ordinary mattress it is necessary to vary the direction of traction with every change in the amount of traction.

To consume time in attempting to supply air to the child before delivery of the head is to forget what should be an obstetrical motto: "If in a given case it is *possible* to deliver the after-coming head, it *can* and *must* be done with promptness."

PUERPERAL ECLAMPSIA.

By EDWARD T. ABRAMS, M.D.,
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Among the many dangerous and disastrous conditions that may befall the pregnant woman, none can compare with that of eclampsia. Its causative factor has as yet eluded our every endeavor at discovery. The scientific treatment of disease being based upon its etiology, it naturally follows that that of eclampsia must be more or less empirical. It is now generally conceded, however, that the eclamptic symptoms are dependent upon some form of auto-intoxication, and it seems quite certain that this condition is brought about, at least in the first instance, by insufficient metabolism and subsequently by deficient excretion. Statistics as to its frequency differ, but if we place it at one to three hundred we shall be, doubtless, approximately correct. It is a condition so rare that only those of large and extensive clinical experience can see many cases. And yet it is so uncertain in its appearance that any tyro may be called upon to treat a patient in its throes. Eclampsia is most common from the seventh to the ninth month. Of late very interesting and important work has been done along the line of observation on the thyroid. An enlargement of the thyroid appears about the sixth month in primiparæ and in the fifth in multiparæ. But by far the greater number of eclamptic attacks occur near or at the end of pregnancy, when uterine metabolism is at its height. In cases occurring post-partum the attack may be dependent upon the very large increase of cell products which may be liberated by involution or by labor and thrown into the system in large, unmanageable quantities.

The function of the thyroid is to regulate metabolism, and the product of this increased activity is supposed in some way

to neutralize the uterine and placental metabolic products. Lange's experiments, extending over a period of four years, have demonstrated the fact that this thyroidal hyperplasia in pregnancy is physiological. In twenty out of twenty-five cases of pregnancy in which hypertrophy of the thyroid did not occur, albuminuria and convulsions developed. After a long series of observations it has been claimed that in eclamptic patients this normal enlargement of the thyroid does not occur. Lange found in his experiments that pregnant cats required larger thyroids than did non-pregnant for the maintenance of good health. In an examination of some 133 cases of pregnant women, decided enlargement of the thyroid occurred in all but 20, and in 18 of these cases that showed no enlargement the so-called "pregnancy kidney" was found; in all albuminuria was found, and 6 terminated in eclampsia; in 4 all the premonitory symptoms, such as severe headache, dulness of vision, etc., were present, and convulsions were averted only by prompt and vigorous treatment.

Herzfeld, in his study into the causation of this disease, has made some very interesting reports on the influence of pressure upon the ureters and upon *it* as an etiological factor. In his 81 fatal cases all showed pathological changes in the uropoietic tract, and in the majority of cases edema of the brain, and more or less changes in the spleen, liver, and heart, were also found. Chronic nephritis was found in 38 cases out of the 81, yet he states that the conditions found were by far too chronic to have originated during the pregnancy. In 22 per cent there was bilateral compression of both ureters, and he seems to regard it as a typical condition in eclampsia. Howbeit he finds the condition only in primiparæ, and in them only when the disease makes itself manifest at the *onset* of labor; never in multiparæ, *or post-partum, or in primipara* in whom the convulsions occur early in pregnancy. This, then, would leave a very large percentage of eclamptics unaccounted for; and should this be the cause of the seizures in those cases mentioned by him, it would certainly go to show that in all others there must have been some other etiological factor.

It is now admitted that eclampsia is due to a toxemia, but just the nature of it has not yet been determined. Much interesting experimental work has been done by different observers

along the line of the urine and blood, but as yet no very definite conclusions can be drawn from them; and inasmuch as most of them are absolutely conflicting, no definite importance from a practical standpoint can at the present time be placed upon them. That the kidney in pregnancy is in all cases an exceedingly engorged and oftentimes overtaxed organ is certainly true; but that the mere mechanical cause in pregnancy is sufficient to account for eclamptic convulsion has certainly not yet been proved. So also has the effort to identify eclampsia with uremia gone down as "*not proved.*" Many eclamptics die who at the postmortem table do not present any of the pathological changes of uremia; and again, on the other hand, very many uremics die without ever having eclampsia. The consensus of opinion to-day, derived very largely from clinical experience, is most decidedly in favor of the toxemic theory. This being true, we should naturally look with confidence to the examination of the urine and blood to unravel the mystery of its etiology.

At first it was a source of erroneous conclusion that the urine of healthy individuals was more toxic when injected than was that of eclamptics; but when a thorough microscopical examination of the blood serum of those eclamptics was made it was found that the organs of the eclamptics showed, as a constant pathological change, multiple emboli. It was then that it became apparent that the toxins caused convulsions because they were in the blood and were not excreted by the urine. In other words, if the urine were highly toxic, then the blood serum would not be, because the toxic material would have been excreted and not retained to intoxicate the patient with its poisonous effects. It is very difficult for us, however, to examine the blood serum in each and every patient that comes to us; but we can and ought to make a detailed study of the urine in all cases that come under our care. We have in urea a chemical index as to the metabolism of the body, and one which may and ought to be utilized in determining the lack or the perfection of assimilation. We must, however, keep in mind that urea is not in itself a poison, for it represents always the finished product of metabolism. It is the *incomplete* urea in the blood that (in the form of toxins) doubtless causes convulsions. Therefore the

diminution of urea excreted ought to be to us an indication that toxins are being retained.

When we have exhausted all means at our command along this line, the liver, lungs, skin, and intestines should receive their proper amount of attention, in order to ascertain whether or not they are doing their full quota of work as executors. Jaundice is always a very grave symptom.

It is a good rule always to consider a pregnant woman constipated until proved otherwise by a competent nurse. The classical symptoms of this disease have long been recognized in the frontal headache, dimness of vision, and hebetude of mind, all of which are due to the existing toxic condition. There is no condition, perhaps, in the whole realm of obstetrics, where to be forewarned means to be forearmed as it does in eclampsia.

The experiments of Tarnier, Ludwig and Savor certainly show that the toxicity of the blood serum is increased in eclamptics, while, on the other hand, those of Charrin and Volhard seem to prove just as conclusively that it is not. We must, therefore, look to physiological chemistry; and should it isolate a definite toxic body or bodies from the blood of patients in this condition, it would do more to reach a definite and final solution of the etiology of this condition than anything else.

In the treatment of this most serious condition "masterly inactivity" certainly has no place. Every man whose practice is such that he may be called upon to attend obstetrical cases should have in mind a definite outline of the treatment he is to pursue when he meets such a case. To be sure, no one line of treatment will be equally successful in all cases; yet without some well-formed idea of treatment in his mind he would be not unlike a mariner on a boisterous and unknown sea without a chart or compass.

In the treatment prophylaxis stands pre-eminent. A healthy pregnant woman should pass not far from sixty ounces of urine in twenty-four hours with a specific gravity of not far from 1016 and containing from 1¼ to 2¼ per cent of urea. The diet should contain a very decided minimum amount of nitrogenous substances, and all food should be easily assimilated, leaving a minimum of waste. Such articles as beef, pork, mutton, veal, alcoholics, tea, and coffee should be on the prohibited

list. In other words, the diet must be easily digested, readily oxidized, non-constipating, and non-toxic.

The strictest hygienic life should be enjoined. Out-of-door exercise, avoidance of all compression of the waist, frequent bathing, and the wearing of proper underwear are certain fundamental principles that go without saying. Too much stress cannot be laid in eclampsia upon liver insufficiency, for many of the complications of pregnancy will be found to depend directly, we believe, upon faulty action of this organ, and that the kidneys, while they play an important rôle, will nevertheless be found to be largely secondary.

The emunctories, then, must be stimulated. Purge the bowels with Epsom salts or calomel, and keep them free with one or the other of the aperient waters, from time to time varying with some of the different vegetable laxatives. Use water freely. Let the patient drink freely on arising and retiring. Drink plenty of buttermilk. Even in summer woollen underwear should be worn to avoid chilling. See that the skin is doing its work, by giving hot baths. Injections of saline solutions are indispensable when quick action of the kidneys and skin is required. Fresh air and rest are absolutely necessary in the successful management of threatened eclampsia. It is not enough that we examine the urine for albumin in order that we may be on our guard, but the percentage of urea, the specific gravity, and the amount of urine must be determined in every case, and when all this shall have been done they will serve only as a clinical index of the amount of waste products that is being excreted. The patient's general condition must be taken into account. We do not believe that too much importance can be attached to the constipation attendant upon pregnancy.

In view of the many interesting observations made on the thyroid, one would naturally expect much from the administration of thyroid extract. Our own experience has been limited with this remedy, having used it only as a prophylactic. In this, however, we have been very much satisfied with the results. The drug must be fresh and absolutely reliable. If exposed to air and light, or if kept too long in stock, it becomes impaired in its activity. The action of the drug must be carefully watched, though it is ordinarily not a dangerous drug. Patients act very differently, and those suffering from goitre are very susceptible

to its effects. In an eclamptic patient symptoms of thyroidism are very easily induced. The effects of this treatment are in all probability due to the circulatory changes induced by it. The early and invariable action of the drug is acceleration of the pulse, followed in a day or so by a warmth and flushing of the skin. This is due, no doubt, to the enlargement of the arterioles. This in time is followed by increased perspiration, and finally by greatly increased diuresis. This is not observed as an early effect, however, of the treatment. Whether the beneficial results of the thyroid treatment are attributable to its effect on the circulation, or to some more subtle action, we are not yet in a position to state, but that it seems to be a remedy of great utility is certainly apparent.

Nevertheless, the treatment of eclampsia is summed up in the word "elimination," and nothing will give such immediate results as blood-letting, followed by infusion or transfusion of saline solution. Venesection is to-day one of the lost arts. In this condition it relieves vascular tension of the brain and congestion of the lungs, subdues the laboring heart, removes urea from the system, followed by infusion or transfusion, which takes the place, first, of the amount of highly toxic blood that has been withdrawn, and, second, dilutes that which is still retained in the system. If the patient be anemic, do not bleed, but use the saline solution. The uterus should now be emptied. Too many reverse the order by emptying the uterus first and using the saline solution afterward.

If the aforementioned treatment has been faithfully carried out the following conditions will be observed:

First. There will be an immediate favorable change in the patient's general condition.

Second. The cyanosis, muscular twitching, and rigidity will have ceased.

Third. The pulse, which before was hard and bounding, will have lost its tenseness, and the attendant coma, be it ever so deep, will slowly but surely be lifted.

The rationale of the condition thus induced would seem easy of appreciation. The venesection seems to act as a factor in partially removing the cause of the convulsions, be that cause urea or any toxin which may be in the circulation. By the abstraction of a quantity of blood the system will surely get rid

of a quantity of the poison that may be therein. It relieves the congestion of the brain and other organs which has been induced by the eclampsia or the condition existing previous to the seizure. The saline solution will supply the place of the blood withdrawn and will certainly serve to dilute the remaining poison in the circulation, and its stimulating action upon the kidneys and skin adds to its increased elimination by those organs. We are quite sure that if blood-letting, together with saline infusion or transfusion, were more generally employed better results would be obtained in the treatment of eclampsia.

During convalescence the excretory organs must be kept active, the patient quiet and on liquid diet. All depressing influences must be avoided and a high saline enema should be given once daily. We have never been able to commend the free use of morphine, chloral, and bromide, that has been so much lauded by many in the treatment of this disease. They weaken the respiratory centre, suppress the process of oxidation, and certainly diminish the vitality of the cells. Hot baths, except for cleansing purposes, have always seemed to me to do more harm than good, for they seem to increase the irritability of the nervous system.

We must not be misled in our apprehension of the convulsive seizure, however. We have repeatedly seen a primipara and sometimes a highly nervous multipara thrown into a violent spasm as the head passed through the os or over the perineum.

CARCINOMA OF THE LARGE INTESTINES, WITH SPECIAL REFERENCE TO VON MIKULICZ'S METHOD OF RESECTION.

By M. STAMM, M.D.,
FREMONT.

MALIGNANT growths are more frequently found in the larger than in the smaller bowel, also more frequently in males than females. They seem to appear generally between the ages of 40 and 60 years, but have been observed at any age, even in early childhood. The cylindro-epithelial forms of cancer are the type most generally found, whereas the medullary carcinoma is quite rare, and more so even the gelatinous form. The former has a great tendency to ulcerate and produce hemorrhage or perforation into the abdominal cavity. It extends generally in a circular direction and in this way forms a stenosis, with hypertrophy and dilatation of the intestinal walls above the seat of stenosis, with an ultimate result of total obstruction. Its mode of diffusion may be through the lymphatic vessels, peritoneum, through the general circulation, or by continuity. Metastasis sets in rather late in cancer of the bowels, and, according to Hauser, the colloid or gelatinous form has a tendency to produce metastatic foci in the serosa, lymphatic system, or bones, not in the liver. Medullary cancer has more a predilection for the regional lymphatic glands, and the scirrhus more for the liver. The symptoms seem to develop quite slowly, and obstinate constipation appears to be the most prominent one; by some observers this is even considered the cause of cancer. Trauma has also been looked upon as the cause in a few cases. We notice disturbance of the intestinal function sooner when the cancer is seated in the lower portion of the colon, since the stools are harder there than in the cecum. The annular cancer also causes

symptoms sooner than cancer extending longitudinally along the intestinal wall. In some cases constipation alternates with diarrhea, and a tumor in the sigmoid flexure is accompanied with tenesmus; the stools present the shape of ribbons or resemble the stools of sheep. Bloody discharges are quite an important symptom, whereas the presence of mucus points more to catarrh of the lower bowels. Colicky pains also have some significance, as they are caused by the contraction of the hypertrophic intestinal segments; at the same time gas may be pressed through the stenosed portion, producing in that way a characteristic squirting noise, which König has called *Stenosengeräusch.* The contour of the contracted coil can be readily traced through the abdominal walls and gives the impression of a solid tumor, which, however, suddenly disappears with a gurgling sound. This stiffening of the intestinal coils is a characteristic sign of stenosis, and if it persists after injections, hot applications, or the administration of opiates and laxatives, it becomes a positive diagnostic sign of chronic stenosis. If it is constantly found in the same region it will also indicate the seat of obstruction. This obstruction, as a rule, comes on gradually, but in some cases may develop quite suddenly and may even be combined with invagination. These tumors are found most frequently at the sigmoid flexure, next at the ileo-cecal region, and then at the transverse colon. Tumors of the ileo-cecal region generally rest upon the pelvic bone and can, therefore, be more readily detected than in some other portions of the colon. If located at the ascending colon and hepatic flexure they can be palpated under the borders of the ribs. In the transverse colon some small annular tumors were only detected after the abdomen was opened. In one case the stiffening of the cecum and ascending colon led to its diagnosis. The splenic flexure has been the seat of small annular tumors, but they escaped detection as they were hidden behind the ribs and could not be readily felt even after incision, since the flexure is not very movable. Distention of the transverse colon and collapse of the descending colon and sigmoid flexure, however, pointed to the seat of obstruction. Tumors of the sigmoid flexure at times also present some difficulty of diagnosis, especially at the lower portion of the flexure, as they are generally small and ring-shaped; and, besides this, the seat of stenosis is overlapped by the inflated smaller intestines. In my case the tumor could

be readily palpated, as it was attached to the abdominal walls. Experience seems to demonstrate that the smaller annular cancers readily escape palpation, are also more apt to cause obstruction, and that the diagnosis is more difficult the more this stage of obstruction is developed. These tumors have quite a tendency to ulcerate and to suppurate, and pus foci may be found in the tumor or in the neighboring organs—*i.e.*, the omentum, intestinal or parietal walls—so that such abscesses may disguise the true condition. Several cases are on record where they perforated into the abdominal cavity and produced general peritonitis. We also find decubital ulcers *(Dehnungsgeschwüre,* as Kocher calls them) above the seat of obstruction, owing to over-distention of the intestinal wall.

Diagnosis of such cancerous tumors is, as a rule, not so easy, except where they are of considerable size. The symptoms of stenosis are colicky pains, rigidity or stiffening of the coil above its seat, and the noises and gurgling sounds of stenosis. If they appear in persons of middle age or older than that, and persist after the use of laxatives or opiates and proper diet, we can safely assume that we have to deal with a stenosis or mechanical obstruction. Tenesmus and bloody or putrid discharges also point to stenosis of the lower part of the colon and call for rectal examination. It would be of great advantage if we could examine such cases before symptoms of obstruction and distention of the bowels have set in; but as these growths at first are latent in their appearance and do not cause much disturbance, patients are generally slow in calling upon a physician. Where, however, symptoms of stenosis become manifest, thorough and repeated examinations should be instituted, even under anesthesia; and if these symptoms persist or become worse, surgical interference should not be delayed very long. Of course with the symptoms of stenosis the nature of the growth has not been made clear, and, besides cancer, we have to think of tubercular and benign growth. The history of the case will give us some clue in this respect, besides the knowledge that malignant growths are of more frequent occurrence. No great danger will, however, accrue for the patient if we are not able to diagnose the real nature of the tumor, since all such conditions call for operative interference. Where the tumor can be palpated some other diagnostic factors have to be considered. In the ileo-cecal region

we may have to deal with chronic inflammatory exudation; this condition, however, shows generally a tendency to absorption, whereas the malignant tumors remain stationary or increase in size. In tubercular tumors the age of the patient, and the history of the case as to tubercular degeneration of some other organ, are valuable factors in diagnosis, although Körte mentions a case which showed tubercular deposits in the lungs and a tumor in the ileo-cecal region which, after operation, proved to be a colloid cancer. Actinomycosis may also form a swelling in the ileo-cecal region that may assume the shape of an inflammatory infiltration as hard as a board or of a circumscribed tumor, so that only a microscopic examination will reveal its true nature. Tumors of the cecum, colon ascendens, and the hepatic flexure not infrequently are mistaken for a floating kidney. The latter, however, has a smoother surface than the nodular growth of cancer, and it can readily be replaced in its normal position. Inflammatory and malignant tumors of the gall-bladder can be mistaken for tumors of the colon, especially when the latter are adherent to the liver; but symptoms of gallstones or jaundice generally precede or accompany the former condition. Tumors of the transverse colon may closely resemble tumors of the larger curvature of the stomach or pylorus. Insufflation of the stomach and bowels will throw some light on this question, and the same may be said of tumors near the splenic flexure. Körte mentions a case where an able diagnostician found some pus on puncturing the tumor; this led him to regard it as a purulent cyst of the spleen, but after inflating the colon he made a diagnosis of tumor of the latter viscus. Tumors of the colon have been mistaken for growths of the kidney, but examination of the urine and insufflation of the bowels will assist us in making a correct diagnosis. Tumors of the sigmoid flexure can sometimes be felt through the rectum or vagina, but they have also been mistaken for tumors of the adnexa. Nothnagel estimates the length in life in cases unaided by operation from one-half to two years; there are a few cases said to have lived five years.

The question of the advisability of an operation is not always easy to solve. The mobility of the tumor has some bearing upon this question. Ileo-cecal tumors are not very movable, and even strongly fixed growths in that locality do not necessarily contra-indicate an operation. Körte, in such a case, removed portions

of the anterior wall of the abdomen and also of the iliac fascia and the patient lived nine years. In the transverse colon or sigmoid flexure things are somewhat different, as tumors in that locality are more movable owing to the anatomical arrangement of those parts. Should they become fixed the possibility of a radical operation is very limited, especially at the lower portion of the sigmoid flexure, where the tumor becomes adherent above the promontory. Adhesions to the abdominal walls or the omentum are of little importance; more serious are adhesions to the neighboring coils or to the bladder. Infiltrations of the mesenteric glands increase the danger very much, especially at the root of the mesentery, where ligature of the larger bloodvessels would endanger the nutrition of some portions of the bowels. Metastasis of the liver or peritoneum contraindicates a radical operation.

The true condition is sometimes only revealed after parts have been exposed by incision. As a rule we are able to tell which portion of the bowels is affected when the tumor is located in those regions which have anatomically a fixed position—*i.e.*, the cecum, the ascending colon, hepatic flexure, and descending colon. In a few cases the cancer was combined with invagination in the ileo-cecum, and the tumor could be felt in the median line near the umbilicus. When located in the transverse colon this viscus may form an arch down to the pelvis, so that a tumor felt in the latter region may mislead us in regard to its connection. If there is no palpable tumor, a probable diagnosis can only be made by the symptoms indicating distention of some coil and stenosis, and by the recurrence of such symptoms at regular intervals and at some fixed portion of the bowels. As stated before, tenesmus and bloody discharges point to a tumor in the sigmoid flexure. The fact, also, that only about one litre of fluid can be injected into the rectum may be considered a characteristic sign of that condition, except where the bowels are considerably distended.

In regard to treatment, our main object should be a radical removal of the malignant growth, and palliative measures should only be reserved for inoperable cases. Unfortunately many patients come into our hands when a radical operation offers very little chance and where an artificial anus alone may prolong life, but will add very little to its pleasures. From a theoretical

and technical standpoint, where radical operation is still admissible, circular resection or lateral implantation or anastomosis would suggest itself, and most of the operators have followed these methods. Körte seems to have had very satisfactory results in cases of ileo-cecal carcinoma by lateral implantation, and he ascribes this result to the fact that none of his cases have suffered from obstruction—a condition which, no doubt, influences the operative result materially. Kocher, Kümmell, Kelly, and some others, after extensive resection of the sigmoid flexure and ascending colon, have invaginated the colon into the rectum. Kümmell reports even a case where he extirpated the colon and rectum to such an extent that he stitched the transverse colon to the anal ring. It is certainly encouraging to know what brilliant success some eminent men have achieved in this line of work. A general survey of the literature and statistics on this subject, however, shows even in the hands of our best surgeons a mortality high enough to cause us to look for some method that might reduce the danger still more. I hailed, therefore, with delight a method described by von Mikulicz[1] which he has followed of late in resection of the larger intestines for malignant or other growths, and which, though in a roundabout way, has given better results than any other method so far described. As it has given great satisfaction in one of my cases, it may be worth while to detail the different steps of the operation by giving the full history of the case.

C. P., aged 54 years, farmer, came to see me toward the end of April, 1901. He had noticed a swelling in the left inguinal region for about two months. Constipation, colicky pains, and some blood in his stools were the most prominent symptoms at that time. His general health did not seem to be affected much by it. The tumor appeared small, a little nodular, and not movable. Operation was proposed, but not accepted until about the middle of June. At that time the mass presented the size of an egg, was less nodular, and seemed to be firmly attached to the parietal walls. Injection of water did not move the tumor and added nothing further in regard to diagnosis. A slight cachectic appearance, however, made the latter more positive in regard to carcinoma. Operation was made on June 27, 1901, and carried out precisely as described by Prof. von Mikulicz. An incision

[1] Handbuch der praktischen Chirurgie, vol. iii.

in the left inguinal region, as usually made in colostomy, revealed the tumor adherent to the parietal peritoneum, which was thickened, and the muscles were edematous. The tumor was of the size of an orange and could readily be separated from its adhesions. The peritoneum was stitched to the integument; the mesentery ligated to the extent of one and one-half inches beyond the limit of the growth on each side; the tumor was then brought outside the peritoneal cavity, so that the two intestinal coils were brought into parallel apposition and, so to say, formed the pedicle. The hiatus in the mesentery was brought together by a few catgut sutures as far as the coils protruded from the abdominal cavity. These coils were brought more intimately together by a continuous row of sutures on each side, so that there would be little danger of perforation from the instrument which von Mikulicz used to clamp the spur and which he called "kentrotribe" (*Sporngueische*). A few sutures fixed the bowels to the edge of the wound, and especial care was taken that the mesocolon would reach up to the level of the wound to prevent gangrene of the intestine in the abdominal cavity. The parietal incision was then closed in a manner similar to colostomy. This condition still makes it possible for gas, and even stools, to pass through the eventrated coil. My patient began to complain of a rumbling of the bowels and pain about thirty-six hours after operation, so that about 2 o'clock in the morning I cut the tumor off with a pair of shears. The temperature varied the first two days between 102° and 103°, but after removal of the growth it went down to 101°. The efferent coil was left a little longer than the afferent one, as the latter has a greater tendency to protrude and the former to retract. The result of this procedure is an artificial anus, which is left in that condition for about ten days or two weeks; after that time the spur can be clamped off with Mikulicz's clamp (or *Sporngueische,* as he calls it) and which I here show you. This instrument could not be found here in the market, and the manufacturers did not venture to make one unless they had a sample to copy it from. It was, therefore, ordered from Germany, which caused quite a delay, so that I could not apply it sooner than October 2, 1901. I removed it on October 11 and allowed the patient to go home for a few weeks, to see what effort nature would make in closing the intestine.

On his return, November 25, I found the spur very much shortened, but stools still passed out at the side with the exception of a few evacuations through the anus. The clamp was applied again for a few days and the final operation made on December 14. An incision was made around the artificial anus about one-half inch from the mucous membrane, and a tampon introduced into the lumen of the upper coil; the peritoneum was opened at the lower edge of the wound. The adhesions were firm and extensive, and it required some time to separate them. The projecting mucous membrane was removed with the excised tissue of the abdominal wall. I then first united the mucous membrane of the two coils, and this was followed by two rows of Lembert sutures. A small sterilized gauze strip was left over the line of suture and the abdominal wound closed with silk and silver sutures. With the removal of the tampon on the fourth day a little brownish fluid and gas with fecal odor escaped. Temperature varied between 99° and 100½°, pulse 62 to 72 per minute. A little flatus passed through the anus on the second day, and for about ten days a little escape of gas through the wound could be noticed. On the thirteenth day I injected some Epsom salt solution, colored with methylene blue, into the colon, but no fluid escaped through the wound, which was healed up to a small stitch hole. Bowels had not moved before, but did move twice the same night. Patient left the hospital on December 28, and a recent examination shows him in better health than he had been for years.

Von Mikulicz stated, in a letter written to me in February last, that he was well satisfied with this method and that it had enabled him to undertake without too great risk operations in cases which had hitherto been considered inoperable. He could report at that time about 30 operations made by himself and others, and that the mortality did not reach 10 per cent. It should be remembered that with the other methods the mortality still ranges from 36 to 50 per cent even in the best hands.

From a paper read by von Mikulicz before the German Surgical Society I notice that he has modified the operation somewhat. Instead of waiting twelve to forty-eight hours before he cuts off the tumor, he now removes it at once and places a large glass tube into the upper coil, to which is attached a rubber tube to drain off the intestinal contents. The wound,

after being closed in a manner similar to an artificial anus, is covered with zinc paste and sterilized gauze; a piece of oiled silk, provided with a slit to pull the tumor through it, is placed over this. As to the ultimate result, he states that out of 12 cases operated upon more than four years ago there has been no recurrence so far in 5 cases, and they represent a time from four to nine and one-quarter years. This report, combined with the one furnished two years ago by Körte, would give 9 permanent cures out of 24 cases, or 37.5 per cent, which compares favorably with any other statistics on operations for cancer.

HERNIA OF THE UTERUS; BOTH OVARIES—ONE OF THESE BEING CYSTIC—FALLOPIAN TUBES, BLADDER, AND RECTUM IN A SAC FORMED BY THE VAGINA.

By MANNING SIMONS, M.D.,
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C. B., a colored woman of about 57 years of age, was referred to me for surgical treatment. As is usual with this class of patients, the history of her case, as given by herself, was vague and uncertain. She had two children, most probably under the care of a midwife of her own race, but poorly equipped for her office. She is said to have had no trouble in her confinements, except that the labor was prolonged with the second child. In 1885 she sought the advice of Dr. Grimke for a tumor at the vulva that she could not return, who discovered what he regarded a procidentia of the uterus; this he reduced and put in a support. There was no history of hemorrhage from the growth or discharge purulent or otherwise. In 1895 Dr. Grimke saw her again with a recurrence of the tumor, which he reduced and kept in place with a pad at the vulva. In 1900 she again sought advice because of the tumor, that had grown so large that it could not be returned.

In this condition she was sent to the City Hospital on August 15, 1900, and the case was turned over to me. The condition of the woman at this time had become most distressing because of the weight and size of the tumor, which had reached a volume nearly as large as an adult's head. It hung from the vulva, between her thighs, and reached midway to her knees. It was more or less pyriform in shape, with the base directed downward, the upper part being apparently attached at the inner aspect of the vulva. The surface of the tumor was more or less

smooth, except at certain points where superficial ulcerations had occurred, probably from the friction of her clothing and locomotion. The outer surface had the naked-eye appearance of mucous membrane undergoing transformation into skin, and at points were to be observed a deposit and development of the black pigment of the rest of her body.

On palpation there was a sensation imparted to the touch of elasticity, with indistinct, deep-seated fluctuation of a heavy, semi-solid mass. Traced upward, the growth faded away at the vulvar orifice, and the finger could find no entrance into the vagina. On a careful examination of the surface there was no evidence of the os uteri, nor were there indications of the openings of the Fallopian tubes. On the anterior surface of the neck of the growth the meatus of the urethra was seen prominent and on a plane somewhat anterior to the vulva. By bimanual examination, with the left hand upon the abdomen and the fingers of the right hand in the rectum, it was discovered that the uterus was absent from its proper position, and the ovaries could not be distinguished. This examination was much facilitated by the fact that almost the whole hand could be introduced into the rectum, entering a cavity of considerable size. The wall of the rectum could be easily pushed forward in this examination, and advantage was taken of this to explore the growth from above. The fingers easily entered a well-defined ring, and through this could be introduced into the tumor from above. During this manipulation a fluctuating tumor was felt in the lower part of the abdomen and in the pelvis, and, when pressed upon, urine escaped from the meatus. A catheter introduced into the urethra did not follow the usual direction of that tube, but passed downward into the tumor, its point being easily distinguished through the anterior wall of the tumor, midway from above downward. With these facts, elicited by careful and repeated examinations, a correct diagnosis of the condition of things seemed almost impossible. The failure to discover the cervix or os uteri negatived the idea that it was a procidentia of the uterus that had drawn down the vagina with it. The absence of the history of hemorrhages, and the failure to discover the orifices of the Fallopian tubes, seemed to render inversion of the uterus improbable. Under these circumstances it was determined to do a laparatomy, exploratory in character, to dis-

cover the nature of the contents of the sac, the opening of which communicating with the abdomen had been satisfactorily made out by the hand in the rectum. When the patient had been anesthetized and placed upon the table, another careful and final investigation was made. On this examination the sensation of deep-seated fluctuation at the lower and posterior aspect of the tumor was so positive that it was determined to make an exploration with an aspirator. The result of this puncture was to obtain a thick mucous fluid. I was satisfied that I had a cyst of some kind to deal with, and the plan of my operation and attack on the tumor was changed. I determined to lay open the sac and explore its contents.

Operation.—A catheter was introduced into the bladder, or rather into that portion of it that was contained in the tumor. This was done to mark the lowest point to which the viscus extended, in order that it might not be reached by the incision. A similar precaution was taken to protect the rectum, which, I felt certain, was included to a considerable extent in the tumor. An incision about four inches long was made in the median line on the anterior surface of the tumor; at a depth of about three-fourths of an inch the cavity of the sac was reached. This sac, which developed itself on our incision, contained little or no free fluid. The contents of the sac consisted of the bladder, in front and above, the lower level of which, easily outlined by the catheter, was first distinguished, uninjured by the incision. Below the bladder was the uterus, of normal size, on the right side of which were easily traced the broad ligament and Fallopian tube, with the corresponding ovary in a healthy condition. To the left of the uterus, extending to the bottom of the sac and upward toward the abdomen, upon which it encroached, was the left ovary, that had degenerated into a cyst of the size of a cocoanut. The tube of the left side was also recognized. The rectum, greatly dilated, was found at the back of the sac. The broad ligament and tube were tied off first on the right side, the cyst on the left side was emptied of its contents, the attachments tied, and the uterus with its adnexa removed. A coil of small intestine escaped during this procedure, but was returned without damage. The redundant portion of the sac was excised, the edges brought together vertically and sutured with chromicized catgut, an opening being left at the centre for drainage.

Into this opening a gauze drain was introduced. So much of the vagina as remained was returned and a tampon placed to keep the parts in position and prevent the downward pressure of the intestines. The patient recovered from the operation and is now performing the duties of a house servant, her disability having been removed.

I believe the first step in the production of the remarkable condition found in this case was a lacerated perineum, resulting in the formation of cystocele and rectocele. The vagina became more and more everted, the cystocele and rectocele progressively protruding in the erect position incident to the occupation of this laboring woman. By constant attrition of the surfaces of the mucous membrane of the cystocele and rectocele, always in contact in their protruded condition, two approximated abraded surfaces grew together, and in this way the vagina formed a veritable sac. It was only a question of time, under the existing conditions, for the uterus to descend.

"Complete prolapse of the uterus is usually associated with complete prolapse of the anterior and posterior vaginal walls, together with corresponding portions of the bladder and rectum. When only one vaginal wall is prolapsed, it is usually the anterior, with corresponding portion of bladder, and in the large majority of cases this is the way in which uterine prolapse first begins: viz., prolapse of the anterior vaginal wall and bladder; second, dragging down of the heavy uterus, and then prolapse of the posterior vaginal wall and rectum." There are a few cases on record in which an anteflexed or retroflexed uterus of perfectly normal size was found prolapsed outside of the vaginal orifice, surrounded by the completely prolapsed vaginal walls with bladder and rectum. These latter cases are very rare and can only be explained on the principle that a very small uterus, whether anteflexed or retroflexed, was gradually or forcibly drawn down by the prolapsing vaginal walls (Keating and Coe). All the viscera except the pancreas (even the gravid uterus) have occasionally been found protruded partially or entirely, especially in cases of congenital deficiency of the abdominal parietes.

Hernia of the ovary, alone or with the tube, cannot be said to be very uncommon, but of hernia of the uterus the number of recorded cases is very small. Reference to treatises on gyne-

cology develops the fact that this condition is not even mentioned by the great majority of authorities. The author of the article on uterine displacement in "Clinical Gynecology," by Keating and Coe, makes the following remarks: "Merely as a matter of completeness, I will refer to a very rare accident which must be logically classed under the head of uterine displacements, namely, a displacement of the uterus into the sac of an inguinal hernia. There are five such cases on record, one of which it was my fortune to see when assistant to Prof. Scanzoni at Würzburg in 1868; an additional interest was added to the case by the fact that the woman was four months pregnant, having probably become so before the uterus was thus displaced."

Gould and Pyle, in "Anomalies and Curiosities in Medicine," record 19 cases of hernia of the uterus quoted from Debierre. These 19 cases are found in C. Debierre's "Les Vices de Conformation des Organes Genitaux et Urinaires de la Femme," twelvemo, Paris, 1892.

Hernies de l'utérus.—Of 19 cases of hernia of the uterus, 13 have been observed in the inguinal region, 5 on the right, 7 on the left side. In a case by Roux (of Lausanne), which up to the present stands alone, the hernia existed on both sides at the same time. The uterus has been found twice in femoral hernia, only once in an obturator hernia, three times in umbilical hernia.

Generally the uterus is altered in its form and its situation is modified. Frequently it is accompanied by the ovary and Fallopian tube, and in cases where it enters an inguinal sac the intestine and the epiploon are often found with it. Doring, Ledesma, Rektorzic, Scanzoni have seen the pregnant uterus in an inguinal hernial sac; Leoland, Murray, Hagner, in an umbilical hernia.

In the cases of Maret and Roux, the hernia of the uterus, manifestly congenital, seems to have been produced by the shortness of the round ligament. But in the most common cases it seems that this organ is carried along by a previous hernia of the ovary, or by the growth of the hernial sac at the expense of the peritoneum of the great ligament.

In a search of the whole medical literature to which I have been able to have access I can find only one case somewhat similar to that I have reported in this paper. It is reported by Dr. J. W. Cousins in an address on ovarian hernia and the pro-

trusion of the appendages through rupture of the vaginal wall.[1] Prolapse of the abdominal or pelvic viscera through a rupture of the vaginal wall is a very uncommon accident and is scarcely referred to by any English writers. I am indebted to Mr. Alban Doran for this reference and to Dr. Brunton for the following notes: "L. B., aged 50, a tall, cachectic-looking woman, and the mother of several children, was admitted to the Portsmouth Asylum under the care of Dr. Bland in October, 1893, suffering from melancholia. Shortly after admission she was found to be laboring under severe prolapse of the uterus and rectum; the uterus was completely prolapsed and appeared externally like a large, sausage-shaped body covered by the vaginal wall. The rugæ were all effaced and some abrasions existed on the surface. The rectum protruded about four inches and was marked by many superficial ulcerations. Both organs were reduced by manipulation, but no amount of mechanical support was sufficient to retain them in position for any length of time in consequence of the persistent straining of the patient. A few weeks after admission the attention of Dr. Bland was called by the nurse to a large swelling that had come down during the night. On examination a fleshy and irregular mass was discovered protruding from the vulva directly behind the prolapsed uterus. On December 29 I was called to examine the case. The protrusion was found to be an ovary and tube in a condition of acute strangulation, which had escaped through laceration of the vaginal wall. The patient was in a state of great depression and her pulse was quick and feeble. She complained of great pain, and occasionally vomited. The protruding organs were returned at once, the mass was pulled down, secured at the neck by a ligature, and then cut off. The vagina was wiped dry, dusted with iodoform, and a gauze plug inserted into it. . . . The protruding organs gave very little trouble. . . . By the end of February the patient had made a good recovery. . . . Neither organ has been protruded externally for many months."

I am induced to make a report of this case because of its exceeding rarity. In fact, the case seems to be unique, as, after an exhaustive and painstaking search of the National Medical Library, I have been unable to find any like reports.

[1] British Medical Journal, 1895, vol. ii., p. 185.

THE MECHANISM OF LABOR IN POSTERIOR POSITIONS OF VERTEX PRESENTATIONS.

By SIGMAR STARK, M.D.,
CINCINNATI.

THE mechanism of labor in occipito-posterior positions is not only the most intricate and varying of all positions, but also one which receives the least consideration in our text books of obstetrics. The variations in the form of the mechanism are dependent upon the size of the pelvis and upon the size and degree of flexion of the child's head. The greatest complexity manifests itself at the brim. Before proceeding to the description of the various forms of labor encountered here we must recall some of the anatomical features of the superior strait. For the sake of simplicity I will only consider R. O. P., the common posterior position.

The right oblique diameter is trisected by two imaginary lines, one passing from the right side of the promontory of the sacrum to the right ilio-pectineal eminence, and the other from the left sacro-iliac synchondrosis to the pubes parallel to the first line, thus dividing the right oblique diameter into unequal portions, the posterior of which is the narrower, showing an average measurement, in a number of bony pelves which I have measured, of three and one-half inches, the anterior being sufficiently ample to accommodate any of the lateral diameters of the head. The second anatomical point requiring attention is the distance from the termination of the right oblique diameter at the pectineal eminence to its intersection with the short line subtending the promontory of the sacrum and the ilium. In a number of bony pelves in which this measurement was taken I found the average distance to be four inches.

To avoid descriptive repetition in the subsequent reference to

this line I will christen it the "diameter of favorable engagement," because of the easier and more rapid termination of cases so engaging. There are four forms of mechanism encountered at the brim:

1. The entrance of the occiput in the "diameter of favorable engagement" with the head in a state of excessive flexion.

2. Arrest of the occiput, descent of the sinciput, release of the occiput with re-establishment of flexion.

3. Arrest of the occiput, descent of the sinciput, and conversion into a face presentation.

4. Arrest of the occiput, descent of the sinciput, impaction and arrest of labor.

In mechanism 1 the head is extremely flexed, the suboccipitobregmatic diameter measuring three and three-quarter inches, corresponding with the "diameter of favorable engagement," measuring four inches. This is the most frequent form and is recognizable by the location of the small fontanelle, it being directly in the axis of the pelvis. It is also the most favorable form, for the occiput does not impinge upon the small space corresponding to the posterior extremity of the right oblique diameter. With good pains the occiput rapidly descends into the cavity of the pelvis, anterior rotation commencing the moment resistance is encountered, often being completed before the floor of the pelvis is reached.

In mechanism 2 the biparietal diameter of three and three-quarter inches is arrested in the small space measuring but three and one-half inches, and the expulsive power of the uterus is expended upon the sinciput. We then have a mechanism taking place similar in character to that which transpires in flattened pelves, the pivotal points being the ends of the short line in place of the terminals of the conjugate. There is the same temporary dip of the large fontanelle, continuing until the biparietal diameter is released from the small space, when the occiput descends. The sinciput meeting with resistance from the left antero-lateral wall of the pelvis, flexion is re-established. This is the form which is marked by a tardy and irregular first stage of labor because of the maladaptability of the presenting part to the brim.

Mechanism 3 takes place when the engagement is such that the occiput is not readily released, either because of its firm im-

paction or because the expulsive power upon the sinciput has become so predominant that it is continuous until complete extension occurs. It is possible that this may also be caused by the absence of sufficient resistance to bring about flexion. It is furthermore possible that this form is met with in some instances in which the primary causes productive of face presentation are present, but to an insufficient degree, becoming more effective as the head engages in the pelvis.

In mechanism 4 we have to deal with large heads engaging in comparatively small pelves. I once met with a case of this character in a justo-minor pelvis of moderate degree, there having been a premature rupture of the membranes. Labor was arrested for over an hour, but continued after manual rotation of the occiput. In this case we have the occiput firmly wedged in the small space and the sinciput descending until the occipito-mental diameter or some diameter short of this is engaged. We then have a five to a five and a quarter inch diameter occupying the oblique diameter of the pelvis measuring five inches or less, and an arrest of labor is the consequence.

When the occiput reaches the pelvic floor, and often even earlier, the next phenomenon in the mechanism of labor becomes manifest. The occiput rotates either anteriorly or posteriorly. The requisites for anterior rotation are flexion, good pains, and a relatively rigid pelvic floor. If the head be in a position of extension, the sinciput rotates anteriorly, according to the law in obstetrics that the most dependent point rotates to the front. Good pains and a relatively rigid pelvic floor are essential in order to establish the proper balance between the forces of expulsion and resistance. The early experiment of Dubois, which has time and again been repeated for class demonstration, readily proves this. If the head be undersized or excessively compressible, as is the case in premature births or in the delivery of a dead child, a disturbance in the factors just referred to exists and occipito-posterior rotation is the rule.

In addition to the preceding, Penrose mentions a third form of mechanism which may occur, namely, the conversion of an occipito-posterior into a mento-anterior. He says: "The third way is very rare. In these cases the occiput reaches the floor of the pelvis and becomes caught or fastened on some abnormal projecting surface or point, in such a manner that anterior or

posterior rotation becomes impossible. The chin now leaves the breast of the child and sinks behind the pubis, and ultimately the case terminates as a face presentation of a mento-anterior variety. In a case of this sort we may suppose the occiput arrested and its further advance rendered impossible by some cause or other; a long and hooked spinous process of the ischium could furnish such an obstruction. It should now be called to mind what takes place in every case of labor in an occipito-anterior position when the occiput gets locked beneath the arch of the pubis. The opposite extremity of the head, the chin, as the only part free to move, under the force of the expelling powers leaves the breast of the child and the head extends; and this is precisely what we have taking place in these very rare cases. The occiput becomes arrested; it can advance no farther; it can rotate neither forward nor backward; and finally the chin, as the only part of the head free to move, leaves the breast of the child, and the head extends, and the labor terminates as a face presentation. The occipito-mental diameter of the head is five inches, the oblique diameter of the cavity is six inches; hence the extension of the head is entirely possible." Possibly this form of mechanism may occur, but I can only conceive of it in the presence of an undersized or easily moulded head. At the outlet the birth of the head is accomplished by extension.

RUPTURE OF THE URINARY BLADDER.

By JOHN W. KEEFE, M.D.,
PROVIDENCE.

Rupture of the bladder may involve one or all three walls of the viscus. A rupture is either intraperitoneal, involving the peritoneal covering; extraperitoneal, involving a portion of the bladder not covered with peritoneum; or subperitoneal, the mucous and muscular walls being ruptured, leaving the peritoneal covering intact; this latter variety is very uncommon.

The most frequent location of rupture is in the upper and posterior portion of the bladder, and this may be accounted for by the distended bladder lying in contact with the promontory of the sacrum, force applied in front pressing the viscus against this bony point. The bladder wall is also thinnest at this location. Most of the ruptures located anteriorly are complicated with fracture of the pelvic bones. The rent is usually linear, with ragged and everted edges. There is usually but one wound of the bladder; yet cases are on record where several rents have been found. There is greater liability of rupture when the bladder is distended, often a comparatively slight traumatism causing this lesion.

Atony, sacculation, and ulceration of vesical walls are predisposing causes. Several cases of rupture are reported where the bladder wall was found hypertrophied. In about half the cases reported the bladder wall was normal. The direct cause of rupture is usually some form of external violence applied over the region of the bladder. Rupture by *contre-coup* has occurred by the patient falling from a height and striking on the feet or buttocks, even with a comparatively empty bladder. Violent straining during defecation, micturition, and parturition has been known to produce rupture of the bladder. The lesion is more common in men than in women in a ratio of ten to one.

Rupture has occurred in over-distention from injection of fluid preparatory to a suprapubic operation, and during etherization with the bladder already distended.

The symptoms of bladder rupture are: shock, pain over hypogastrium, desire to frequently micturate, inability to void urine or possibly a few drops mixed with blood. The face is pale and anxious, pulse rapid and feeble; clammy perspiration; abdomen becomes distended; temperature rises; delirium; coma and convulsions may ensue. If the patient rallies from shock, peritonitis or septicemia may follow. Infiltration of urine may become very extensive, involving the scrotum, thighs, abdomen, and back as high as the scapular region. The patient frequently says he " felt something give way inside the belly," or that he suddenly felt relief from a previously over-distended bladder.

Catheterization is of special value. If, when a catheter is passed, no urine or a very small amount is collected, when we know the patient has not micturated for several hours, we may suspect rupture. Injection of fluid into the bladder which does not return, or if a greater amount returns than was injected, are also diagnostic signs of rupture. Keen recommends the injection of air; if a rupture be present the abdominal cavity becomes distended. There is rarely any external evidence of contusion found over the abdomen. In some cases the patient has been able to void a considerable quantity of water, even after the first catheterization. One should bear in mind that the abdominal cavity may contain considerable urine and that compression of the abdominal muscles may force urine through the bladder and urethra. Coils of intestine have occluded the rent in the vesical walls in some instances, and symptoms of strangulation of the intestine have been most prominent. Adhesions about the rupture have protected the general abdominal cavity in some cases.

The histories of a number of cases show that the presence of clear urine in the bladder is not evidence that the viscus has not been ruptured. A case in point occurred at the Rhode Island Hospital some years ago. Clear urine was drawn by catheter at frequent intervals and there seemed to be considerable force to the stream. The sudden event of blood in the urine after an injury may lead one to suspect the presence of rupture of the bladder wall. Yet the urine may be tinged with

blood when we have merely a contusion without laceration of the bladder wall.

Early diagnosis is most important; then comes the determination of whether the rent is extra- or intraperitoneal, and, if extraperitoneal, the extent of infiltration. Digital examination of the bladder wall by a small median incision has been practised by some surgeons. In a series of 315 cases, only 16 per cent recovered; of 21 laparatomies for intraperitoneal ruptures, 10 were successful. I should advocate early laparatomy in obscure cases, whether I thought they might be intra- or extraperitoneal, so as to determine the location of the rent or the extent and position of infiltrations, that the rent may be sutured or suitable drainage employed. The rent should be closed with interrupted, fine silk sutures, the ends cut short. The edge of the mucous coat should be inverted and stitches should include only peritoneal and muscular coats. The sutures should not be more than a quarter of an inch apart, beginning and ending some distance from the ends of the wound, as it is at these ends leakage usually takes place. The bladder should be moderately distended with fluid after closing the wound, and additional sutures introduced if the wound leaks. An air bag in the rectum may aid in pushing the bladder forward and expedite the introduction of the sutures. A soft, velvet-eyed catheter is introduced just within the bladder; a rubber tube attached to the catheter, the other end being dropped into a bottle, partially filled with carbolized solution, placed under the bed, thus siphoning the contents of the bladder. The abdominal cavity should be washed out with a normal salt solution, one-tenth of one per cent. The vesical and abdominal walls may be stitched together as a last resort, where the rent cannot be sutured.

Thorough drainage of extravasated urine in extraperitoneal rupture should be resorted to, besides drainage of the bladder by a retained catheter or perineal wound. Kraske's operation for removal of the coccyx has been done to more thoroughly drain the posterior portion of the pelvis. Cabot advocates abdominal section in both intra- and extraperitoneal ruptures, that a better knowledge may be obtained of the location of the rent and of the best position for drainage.

Early laparatomy, which in itself has a mortality of from 1

to 3 per cent, should be practised in not only every known case of rupture of the bladder, but in the doubtful cases.

The following case may be of interest: Mr. J. F. McC., aged 44, entered my service at the Rhode Island Hospital March 21, 1901. During the past year he has been treated by his family physician for chronic nephritis; albumin, hyaline and granular casts being present in the urine, which has been frequently examined. One week ago, while attending a dinner with some congenial friends, he sat on the arm of a Morris chair. The arm gave way, allowing one of the rungs to pass through the perineum a little to the left of the median line, penetrating the bladder. On rising he withdrew the rung, which he found projecting from the perineum. He bled profusely and was taken in a carriage to his family physician, who checked the hemorrhage with ice and pressure. He was then treated at home for one week.

On entering the hospital his pulse was elevated, he was delirious and suffered a great deal from vesical tenesmus. Under oxygen-chloroform anesthesia a perineal section was performed. The bladder was found distended and filled with putrid clots of blood mixed with urine. A remnant of his trousers, which had been pushed into the wound by the rung, was removed. Vesical irrigation and drainage was carried out, and a solution of formalin followed by normal saline proved to be the best solution for irrigation. Urotropin was freely given and it seemed to be of great benefit.

May 1, 1901, he was discharged to return home. He now looks the picture of health, but examination of urine shows a small amount of albumin and casts.

JAMES THOMAS JELKS.

IN MEMORIAM.

JAMES THOMAS JELKS, M.D.

PREPARED BY

WILLIAM WARREN POTTER, M.D.,

BUFFALO.

ONE of the sad events in the history of the association during the current year was the death of Dr. Jelks. At the Louisville meeting he was with us and took active part in the proceedings. He then looked in splendid health, and it seemed as though he was likely to attain an unusual period of longevity. His active life, his buoyant spirits, and his excellent physique all contributed to make such a prognostication justifiable. But a subtle malady developed within the last few months of his life and carried him to his reward while yet in the mid-noon of manhood and in the midst of his greatest usefulness.

James Thomas Jelks was born near Uchee, Russell County, Alabama, May 20, 1849. His father, James William Dorsey Jelks, was a Confederate soldier, and the son, James Thomas, volunteered at the age of fifteen years, serving in Ligeon's legion of Alabama troops. He received his preliminary education at Union Springs, Ala., and commenced the study of medicine in 1868 at the same place, under the tutelage of Dr. Charles H. Franklin, of Union Springs. He took his medical degree from the Medical Department of the University of Nashville, Tennessee, in 1868, commencing the practice of his profession the same year at Colloden, Ga., where he remained for three years. He then removed to Marietta, Ga., where he continued practice during the years 1871-73; next he went to Saint Louis, Mo., where

he remained until 1877. In the latter year he took up his permanent residence at Hot Springs, Ark., on account of the health of a member of his family, and there continued in active practice until near the day of his death, which occurred June 24, 1902, in the fifty-fourth year of his age. It may be stated that he literally "died in the harness," as he was busy with his professional work until almost the last moment. He was suddenly stricken down with an affection of the heart in the midst of the greatest activity of his career as a successful physician, and the news of his death came as a great shock to his friends the country over.

During his professional life Dr. Jelks became a teacher and a writer of distinction. In 1883 he was appointed to the chair of genitourinary surgery and venereal diseases in the College of Physicians and Surgeons at Chicago, which he retained until 1890. In 1892 he became professor of gynecology and syphilology in the Barnes Medical College at Saint Louis, holding this chair until his death. He also became a member of several medical societies, to the proceedings of which he was a frequent contributor of valuable articles and discussions. He was a member of the State Medical Society of Georgia during his residence in that State, and upon his removal to Hot Springs he became a member of the Hot Springs Medical Society and of the Arkansas State Medical Society, serving as president of the latter in 1892. He was a member of the American Medical Association, serving as secretary of the Section on Obstetrics and Gynecology during the session at Cleveland in 1883, at Washington in 1884, and at New Orleans in 1885; he also served as chairman of the Section on Surgery and Anatomy at the sessions of 1892 and 1893. He was a member of the Mississippi Valley Medical Association, of the Southern Surgical and Gynecological Association, of the Chicago Medical Society, of the Saint Louis Medical Society, of North Texas Medical Association, and of the International Association of Railway Surgeons. He was a Fellow of the American Association of Obstetricians and Gynecologists for ten years, having joined at the Saint Louis meeting in 1892. His last attendance was at the meeting at Louisville in 1900, during which he participated spiritedly in the proceedings. He then looked in robust health and seemed equal to any physical or mental demands that might be made upon him.

Dr. Jelks was a frequent contributor to the current medical

literature, and for some years had been one of the editors of the *Hot Springs Medical Journal.* Among his writings may be mentioned: "Antiquity of Syphilis," *Journal of the Americal Medical Association* (1893); "Gunshot Wound of the Liver" (1892); "Comparative Value of Mercury and the Iodides in the Treatment of Syphilis" (1890); "Prevention of Venereal Diseases," *Transactions* of the State Medical Society of Arkansas (1892): "Carcinoma of the Uterus: Hysterectomy" (1893); "Medicinal Treatment of Peritonitis"; "Etiology and Treatment of Pneumonia"; "Medical Education," *Arkansas Medical Journal* (1891-92); "Two Cases of Second Infection of Syphilis," read before the Hot Springs Medical Society; "Second Infection of Syphilis," *Hot Springs Medical Journal;* "Some Effects of Blennorrhea in Women," *American Gynecological Journal;* "Treatment of Syphilis at Hot Springs," *Medical News,* Philadelphia; "Appendicitis and its Treatment," in *Proceedings* of Southern Surgical and Gynecological Association; "Auto-Intoxication from Renal Insufficiency, With and Without Nephritis," Southern Surgical and Gynecological Association, and published in the *New York Medical Journal;* "Laparatomy as a Cure for Ascites Resulting from Cirrhosis of the Liver," read before the Central Texas Medical Society, and published in the *New York Medical Record;* "The Pathfinders in Medicine," published in *Journal of the American Medical Association;* "The Hot Springs of Arkansas and their Therapeutic Indications," in *Climate,* of Saint Louis.

In 1870 Dr. Jelks married Susan E., daughter of Rev. Francis Cook, of Colloden, Ga. His widow and five children survive. One of his sons, Dr. Frank L. Jelks, has succeeded to his medical practice, and another, James T. Jelks, Jr., is in training for a professional career. Two daughters are married, Mrs. Gerald Ware, of Montgomery, Ala., and Mrs. Julian Morris; one daughter being unmarried. Other surviving relatives are two brothers, Governor W. D. Jelks, of Alabama, and R. C. Jelks, of Beaumont, Texas; and one sister, Mrs. Cabaniss, of Birmingham, Ala.

The obsequies of Dr. Jelks were solemn and impressive, being attended by a large number of people, including relatives, friends, physicians, public men, and neighbors, all of which attested the high place which he held in the affections and esteem of the people. During the hour of the funeral the flag on the

state house at Little Rock was at half-mast, in respect to the memory of Dr. Jelks, who was Surgeon-General of the National Guard of Arkansas, with the rank of Brigadier-General.

The various medical organizations and other bodies of which Dr. Jelks was a member have in appropriate memorials testified their appreciation of his worth as man, citizen, physician, and friend.

> And such is human life; so gliding on,
> It glimmers like a meteor, and is gone.

INDEX.

ABRAMS, EDWARD THOMAS, xxv, 207, 341
Abscess, pelvic, treatment of, 93
Angiotribe, a plea for, in abdominal surgery, 55
Appendages, uterine, vaginal route for operations on the, 100
Appendicitis, difficulties of diagnosticating, 184
irrational starvation treatment of, 146
some unusual cases of, and the lessons they teach, 176
Appendix, normal involution of the, 303
surgical relations of the, to pelvic suppuration and operative complications, 167
ASDALE, WILLIAM JAMES, xxv

BACON, JOSEPH BARNES, xxv
BAKER, WASHINGTON HOPKINS, xxv, 65, 153, 181
BALDWIN, JAMES FAIRCHILD, xxv, 51, 113, 188, 194, 205, 226, 270, 288
BARROW, DAVID, xxv
Bladder, rupture of the urinary, 367
BLUME, FREDERICK, xxv
BONIFIELD, CHARLES LYBRAND, xxv, 9, 21, 53, 105, 119, 157, 206, 271, 274
BOSHER, LEWIS C., xxvi
BOYD, JAMES PETER, xxvi
BRANHAM, JOSEPH H., xxvi, 100, 117, 118, 227
Breech presentations, management of, 334
BROWN, JOHN YOUNG, JR., xxvi

Carcinoma of the cervix uteri, 314
of the large intestines, with special reference to von Mikulicz's method of resection, 348
CARSTENS, J. HENRY, xxvi, 110, 162, 165, 190, 205, 209, 220, 225, 226, 227, 266, 273, 288
Celiotomy, bi-inguinal, for complicated aseptic uterine retroversions, 120
during pregnancy, 209
Cervix uteri, carcinoma of the, 314
CHASE, WALTER BENAJAH, xxvi, 19, 69, 75, 191, 271
Cholecystotomy, causes of biliary symptoms after, 330
CLARKE, AUGUSTUS PECK, xxvii, 296
CRILE, GEORGE W., xxvii
CROFFORD, THOMAS JEFFERSON, xxvii
CUMSTON, CHARLES GREENE, xxvii, 38, 52, 66, 78

Davis, William Elias B., xxviii, 15, 26, 189
Deaver, Harry Clay, xxviii
Deaver, John Blair, xxviii, 142, 145, 146, 163
Deciduoma malignum, 221
Disease, pelvic, in the young and unmarried, 9
Dorsett, Walter Blackburn, xxviii, 55, 67, 104, 174, 268, 286, 287
Douglas, Richard, xxviii
Drainage in abdominal and pelvic surgery, 76
Dudley, Clifton Rogers, xxix
Duff, John Milton, xxix
Dunn, B. Sherwood, xxix
Dunn, James C., xxix
Dunning, Lehman Herbert, xxix, 27, 113, 192, 204, 256, 314
Duodenum, perforating ulcers of the, 228

Earle, Frank Breckinridge, xxix
Eastman, Thomas Barker, xxix
Eclampsia, puerperal, 341
Extirpation of the gall-bladder through the lumbar incision, 22

Ferguson, Alexander Hugh, xxx
Fibroids, intrauterine, complicating pregnancy, and retained placenta associated with intrauterine fibroids complicating pregnancy, 196
Fish, Edmund Frost, xxx
Frederick, Carlton Cassius, xxx

Gall-bladder, extirpation of the, through the lumbar incision, 22
Gastrectomy, 289
Gibbons, Henry, Jr., xxx
Gillette, William J., xxx, 218
Gilliam, David Tod, xxx
Goldspohn, Albert, xxx, 64, 74, 107, 120, 143
Griffith, Jefferson Davis, xxx

Haggard, William David, Jr., xxxi
Hall, Rufus Bartlett, xxxi, 25, 111, 112, 154, 259, 269, 272
Hamilton, Charles Sumner, xxxi, 330
Hayd, Herman Emilie, xxxi, 16, 51, 93, 116, 140, 143, 172, 174
Hernia of the uterus, ovaries, tubes, bladder, and rectum in a sac formed by the vagina, 357
Holmes, Josus Billington Sanders, xxxi
Howitt, Henry, xxxii, 275, 287
Hughes, George Maurice, xxxii
Humiston, William Henry, xxxii, 308
Hyde, Joel W., xxxii

Ice following abdominal section, 41
Ill, Charles L., xxxii
Ill, Edward Joseph, xxxii, 321

INGRAHAM, HENRY DOWNER, xxxiii
Intestines, large, carcinoma of the, with special reference to von Mikulicz's method of resection, 348

JAYNE, WALTER ADDISON, xxxiii
JELKS, JAMES THOMAS, obituary notice of, 373
JOHNSTON, GEORGE BEN, xxxiii

KEEFE, JOHN WILLIAM, xxxiii, 367
KELLY, WEBB J., xxxiii

Labor, mechanism of, in posterior positions of vertex presentations, 363
LAIDLEY, LEONIDAS HAMLIN, xxxiv
LANGFITT, WILLIAM STERLING, xxxiv
Laparatomy, exploratory, some problems in, 69
Lesions of the female pelvic tract following labor, 321
Ligatures, infected, giving rise to tetanus after abdominal section, 55
LINCOLN, WALTER RODMAN, xxxiv
LINVILLE, MONTGOMERY, xxxiv, 207
LONGYEAR, HOWARD WILLIAMS, xxxiv, 39, 52, 63, 114, 141, 144
LYONS, JOHN ALEXANDER, xxxiv

MACDONALD, WILLIS GOSS, xxxiv, 22, 64, 160, 162, 219
MCCANDLESS, WILLIAM A., xxxiv
MCCANN, THOMAS, xxxv
MCMURTRY, LEWIS SAMUEL, xxxv, 15, 39, 40, 153, 160, 207, 221, 227
MANTON, WALTER PORTER, xxxv, 22, 28, 66, 193, 206, 225
MILLER, AARON BENJAMIN, xxxv
MORRIS, ROBERT TUTTLE, xxxvi, 303
MURPHY, JOHN BENJAMIN, xxxvi, 109, 117, 118, 142, 158, 160, 228, 257, 265, 268, 269
MYERS, WILLIAM HERSCHEL, xxxvi

NICHOLS, WILLIAM R., xxxvi
NOBLE, GEORGE HENRY, xxxvi

Obituary notice of JAMES THOMAS JELKS, 373

PAINE, JOHN FANNIN YOUNG, xxxvi
PANTZER, HUGO O., xxxvi
PEARSON, WILLIAM LIBBEY, xxxvii
PECK, GEORGE SHERMAN, xxxvii
Pelvis, disease of the, in the young and unmarried, 9
lesions of the female, following labor, 321
suprapubic versus infrapubic procedures in suppuration in the, 29
PFAFF, ORANGE G., xxxvii
PORTER, MILES F., xxxvii, 28, 156, 176, 191, 219, 257, 269, 286
PORTER, WILLIAM DANIEL, xxxvii, 207, 256, 334

41F
34